American Journal of
Public Health
And The Nation's Health

Volume 25 November, 1935 Number 11

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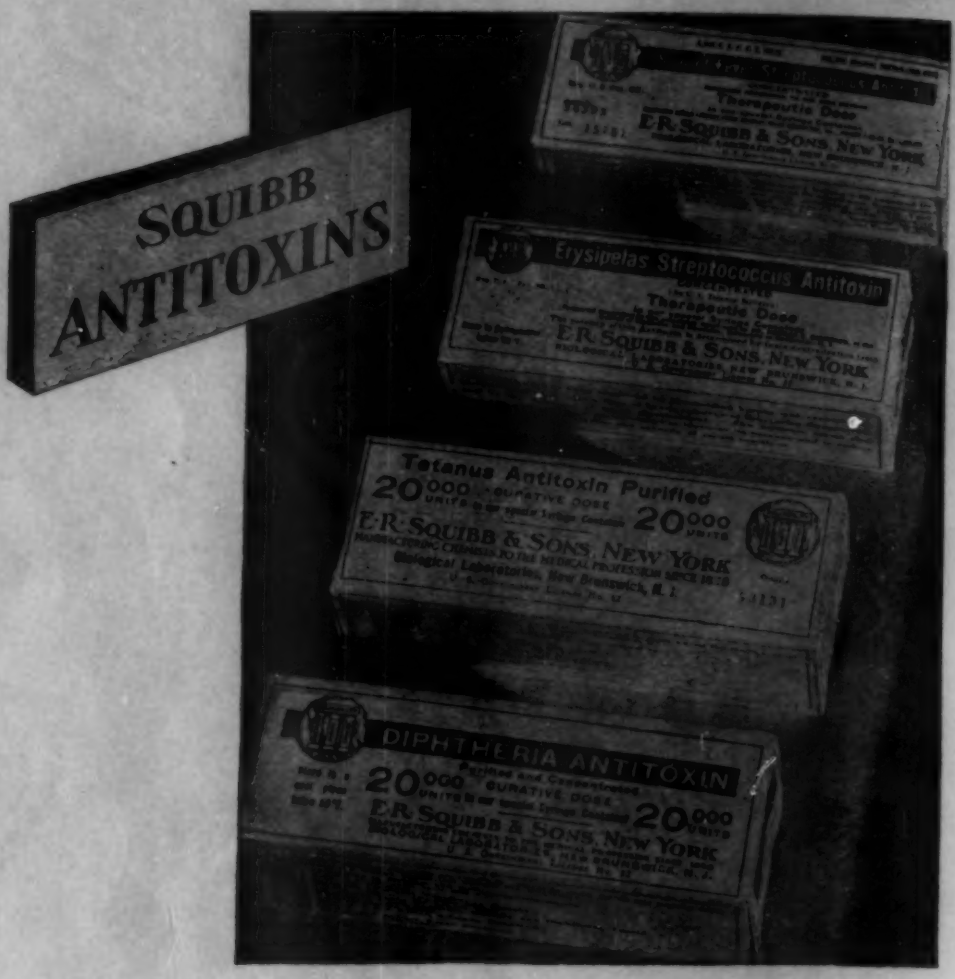
Published by the
American Public Health Association
374 Broadway, Albany, N. Y.
50 West 50th Street, New York, N. Y.



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American Journal of Public Health
and THE NATION'S HEALTH

Volume 25 November, 1935 Number 11

Public Health at the Cross-roads*

E. L. BISHOP, M.D., F.A.P.H.A. (*Life Member*)
President of the American Public Health Association; Director of Health, Tennessee Valley Authority, Knoxville, Tenn.

THIS has been an eventful year in the history of the public health movement. For the first time the importance of public health protection as an element in national security has been fully recognized by expression of a national policy for the strengthening of state and local health agencies. Passage of the Social Security Act by the last Congress presents the public health profession of this country with the greatest opportunity to establish constructive programs of health service that has been given to any group in our history.

It is possible, under this policy and under appropriations already authorized though not yet made, to plan and execute a public health service, comprehensive in its organization, balanced in its programs, and relatively complete in its extent. As Dr. Ravenel has so pointedly emphasized, the American Public Health Association is the twin of modern preventive medicine, for both came into being with the birth of our present conceptions of the spread and prevention of disease. Today, our twin has grown to man's estate and offers us a vast body of scientific knowledge to which both the natural and medical scientist constantly contribute added increments. For much of this knowledge, we, as yet, have found only incomplete facilities of application, but the chance of closing the gap between the acquisition and application of knowledge is at hand. I propose, tonight, that we rededicate ourselves to this purpose.

Epoch making as are the provisions of the Social Security Act in its shifting of our sense of values toward humanity and the conservation of vital resources, the country is to a very large degree prepared for them. For a generation the foundations and philanthropic institutions have carried on experimental work in public health administration, the training of personnel, and the development of proving grounds for teaching new principles and methods in the application of knowledge. This Association has, through its sections and

* Presidential Address, delivered at the First General Session of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 7, 1935.

standing committees, proved itself an invaluable instrumentality in the acquisition and interchange of information relative to public health procedure. No country of the world possesses a more able and efficient health agency than our own United States Public Health Service, and nowhere can be found more cordial relations than exist between this federal agency and the individual state agencies. Though local health organizations are yet limited in extent, the combined efforts of the voluntary and official health agencies of the country have established beyond reasonable doubt the principles governing local health administration. The present need is to secure the universal application of these principles.

Every state has recognized the place of public health in the governmental structure by the establishment of some form of state health organization. It is obvious, therefore, that there exists not only a knowledge of program and procedure through which much of our present information may be applied, but there is also available a partial structure of organization which needs only strengthening, extension, and expansion to provide equal opportunity of adequate health service for all the people.

The establishment of a national health policy through passage of the Social Security Act, together with the existence of at least the elementary facilities for the application of knowledge, today places the public health profession of this country at the crossroads of opportunity. If its fullest possibilities are to be realized, this turning point in our history must be met in the spirit of highest idealism. Therefore, I am encouraged to restate four fundamental objectives which have been the subjects of our discussions through many years, and in which we can now advance further in achievement than at any time since the organization of the Association.

Equal opportunity for adequate health service for all the people is a capital objective. In a country so vast as ours with unequal distribution of population, natural resources, governmental income, and health situations, it must be perfectly clear that at present little equity exists in the opportunity for the prevention of disease and the achievement of health. Many studies, familiar to most of us, show the wide disparity in the pressure of both common and regional health problems. Moreover, frequent observations show that the region with the smallest financial resources is confronted with the largest need for health service.

The second major objective, and one fundamental to economy and good administration, is the development of a fully balanced and correlated national plan of program and procedure, with each of the three elements of government (federal, state, and local) assuming full responsibility for the functions it is best situated to perform. There is no need for overlapping and duplication. The field is too broad, the responsibility too large, and the existing machinery of organization too inadequate for any agency to fail in assuming its specific duty or to assume duty for the performance of which it is not properly situated.

The third and possibly the most important of all objectives is the establishment of standards of recruitment, education, and training for personnel groups, since no service is better than the people who administer it, nor can knowledge be applied by those who do not possess it. Public health must be made a career service in which standards of ability and professional qualification constitute the exclusive basis of preferment.

The fourth objective is the extension of basic research in both the acquisition and the application of knowledge, in order that the frontiers of our factual

information may be advanced far beyond their present limits. As yet, we have only touched the fringe of potential values, and present research must not only be continued, but extended into new fields if we are to obtain progressive improvement of the methods and measures we use in our daily tasks.

All of these objectives can be realized under the public health provisions of the Social Security Act if we are capable of translating potentialities into action. The Act very specifically provides for

> . . . assisting states, counties, health districts, and other political subdivisions of the states in establishing and maintaining adequate public health service, including the training of personnel for state and local health work.

It further provides for allocation of funds on a basis of population, special health problems, and financial needs of the respective states; for formulation of rules and regulations governing allocation of funds by the Surgeon General of the U. S. Public Health Service, after consultation with a Conference of the State and Territorial health officers; and for the such increased investigation of disease and of problems of sanitation as will make of the U. S. Public Health Service one of the great research institutions of the world.*

What are the essentials to successful action?

I believe the American Public Health Association has the chance to render a service at least equal to and perhaps exceeding that of any official agency. It is the professional association of public health workers. It guides very largely the thinking of the varied groups of professionally and technically trained people included in its ranks. It holds in its membership the real leaders of the public health movement of the country, and it is an admirable medium for the ready exchange of knowledge concerning current practices, procedures, and research. It should be the efficient servant of all its members, and its present organization is such that its effectiveness is constantly increasing. It should, and undoubtedly will, consistently engage in such self-study and provide such expansion as will further increase its usefulness and prestige.

Through the work of its sections and standing committees, it has made large contributions to the advancement of public health practice in this country, but it has a still larger contribution to make. The excellent service the Committee on Administrative Practice has rendered in systematizing health programs, and promoting of better program balance must be continued and expanded where essential, for studies in this field are vital to improvement of methods.

The Committee on Research and Standards must be strengthened by the provision of increased funds, that the main committee and its sub-committees may form critical boards of review and evaluation, a function similar to that fulfilled by certain councils of the American Medical Association. This committee, operating under the handicap of practically no budget, has rendered a valuable service, but has developed as yet only a small fraction of its potentialities.

Perhaps the standing committee of most immediate importance is that on Professional Education. Here will be determined very largely whether or not we shall realize the major objective of standards of education and training through which we may facilitate the evolution of the public health work of

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* I have deliberately refrained from discussion of other fundamental provisions of the Social Security Act including that part providing for the maternal and child hygiene service, work for crippled children, and others, for the reason that the whole matter is one for discussion at a Special Session of the present convention and my purpose is that of illustrating an opportunity rather than discussion of the Act.

the country into a career service. The committee has made a beginning, but only a beginning. The work already accomplished, however, enabled the Conference of State and Territorial Health Officers to formulate professional standards to guide the expansion of public health work organized under the Social Security Act. No more important service could have been rendered by this Association. It is true the work up to now is relatively superficial and general in character, but it is the beginning of a task hitherto left undone, and the committee can do for this Association what the very vital Council on Medical Education has accomplished for the American Medical Association. Progressive improvement of standards must continue if we are to deserve recognition as a group to which the judgment of professional qualifications can be partially delegated. Already in Great Britain

> . . . professional qualifications are usually judged on the basis of membership in professional societies. Thus the selection of chief officers and professional and technical officers is delegated in part to a private professional organization. The theory is that professional qualifications can be better judged by the persons engaged in the profession than by any outside group.[1]

The nation-wide program of training, provided by terms of the Social Security Act, will be far reaching and can accomplish much in the improvement of public health work. The present conditions of haphazard employment of untrained or inadequately trained personnel can be transformed into a system whereby individuals deliberately train for a career in the public health service of some unit of government and, ultimately, we may look forward to the time when such work constitutes a career service in the best and fullest sense of that term. This program of training will do more to exclude partizanship and consideration of political expediency from public health organizations than all the statutes that might be written, for it insures a service which will win public esteem because of its merit. Such a statement requires no proof. We have already shining examples of its truth in our own U. S. Public Health Service and in many state and local organizations. It is a fundamental step forward not only in the betterment of the public health, but in the betterment of government itself, for it recognizes the principle of trained public servants for public service.

Added to the formulation of objectives and the establishment of guiding principles we shall have problems of organization. One of the most important of these is that of effective decentralization of service to the state and local health agencies, because a very fundamental policy, expressed in the public health title of the Social Security Act, is that of decentralization through the imposition of larger responsibility upon these agencies. We must be aware, however, that this carries with it an obligation to weld effectively the health service of all three elements of our government into a properly articulated whole. In this connection a resolution passed by the third annual convention of our Association in 1874 stands out as of exceeding interest. It provided that a committee consisting of a member from each state and territory of the Union be appointed to petition Congress at its next session to institute a Bureau of Health, located at Washington with a *branch at the seat of each state and territorial government*. A Bureau of Health has long since been created, but it seems to me rather fundamental to the success of our present efforts that well trained officers of the U. S. Public Health Service be made available to each state for consultation and field service in immediate program development, in personnel training and for as-

sistance in the planning of ultimate objectives.

Those of us who serve or have served as state health officials fully realize the value of such aid, and most of us could cite a number of examples in which it has resulted not only in shortening by a decade or more the period required for the development of effective organizations, but also in the planning of much better balanced and broader programs. Financial aid is not the only prerequisite of good work. Persons must translate money into accomplishment.

While all of our states have some form of state health organization, in many instances appropriations and personnel are insufficient to provide for even the most basic functions of a state health department. It is, however, in local health service that the most glaring deficiencies are shown, for of the more than 3,000 counties of this country, only 540 have provided even the foundations for whole-time health service, and some urban areas have organizations equal only to the most rudimentary requirements. It is in the state and local elements of our health machinery that the greatest structural weakness lies, and until these weaknesses are strengthened many sections of the country will be either partially or wholly without facilities through which the full values of present opportunities may be grasped. Individually and collectively we must exert our whole force in the effort to overcome these weaknesses. Hence a second organizational problem of extreme and immediate importance is that of closing these gaps through the establishment of properly organized health agencies where there are now no such agencies, and of increasing the adequacy of those which are inadequate.

As a group devoted to the service of humanity, we must become increasingly conscious that we are passing through a renaissance of preventive medicine and public health, and that almost coincidentally with the birth of this Association, a new epoch began in the history of man's effort to survive the hazards of his environment and the menace of his fellow man. Our knowledge of the causative agents of disease, channels of infection, differential diagnosis, immunization and, even more important, the causes of good health, affords evidence that the human race fights a winning battle against the forces that would destroy it. This knowledge imposes upon us the responsibility of effecting a functional correlation wherever there is common interest and where administrative or organic union is inadvisable or impossible. The need of such correlation applies to all the categories of relationships—to the one governmental agency and another; to one professional group and others; to voluntary and professional associations—for all must, if they deserve survival and support, have the common objective of service to humanity.

Because of the greater importance of the immediate opportunity which the last Congress placed squarely before us as a responsibility, I have purposely refrained from detailed comment upon the affairs of the Association. There is, however, one point in connection with Association affairs which I should like to mention in conclusion.

I am sure you join me in holding for Dr. Kendall Emerson, our Executive Secretary for some years past, the deepest possible gratitude for his fine achievements in carrying the Association successfully through the most trying years since its organization, and that you, with me, have for him the most sincere affection. No human, however, could bear indefinitely the double burden of administering two great associations, especially with the problems of our Association so largely increased.

We are fortunate in having secured Dr. Reginald M. Atwater to continue, on a full-time basis, the fine service of Dr. Emerson. He, too, is a man we may all esteem for his fine attainments as an executive, a leader, and a friend.

Placing the secretaryship on a full-time basis could not have been done at a more opportune time in view of the importance of the work in relation to the matters considered throughout this discussion. I have every confidence that the affairs of the Association will prosper under his administration, and that it will meet its larger responsibilities with increasing effectiveness. In our support of his labors let us keep constantly in mind the statement of our first president, Dr. Stephen Smith, at the Semicentennial Meeting in 1921:

> May I be permitted reverently to suggest that our purpose has the same sentiment as was heard by the shepherds on the plains of Judea at the Nativity? Then the "good will to men" was announced to be the salvation of the soul from sin by divine appointment; while we now learn that salvation from the sins of the body must be effected by man himself, who created them.
>
> Let us apply ourselves to the task with renewed vigor, and thus enable those who will greet the centennial anniversary of this Association to hear from sanitary officials the good news that the death rate of the year 1971 is limited to those afflicted with old age, or to disease or accidents unpreventable and incurable by any agencies known to science.

REFERENCE

1. Walker, Harvey. *Training Public Employees in Great Britain*, Monograph 6, Commission of Inquiry on Public Service Personnel, 1935.

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Economic Health and Public Health Objectives*

JOSEPHINE ROCHE, LL.D.
Assistant Secretary of the Treasury, in Charge of Public Health, Washington, D. C.

AS we now begin to emerge from our recent so-called period of "emergency," a few lasting lessons have been learned, we hope, by those of us interested primarily in the advancement of human welfare.

One of them, resulting from our coming to grips, as we have, with unprecedented human denials and suffering, is how completely interwoven and interdependent our various responsibilities are in changing the old order. We have long talked about our age of specialization—the field of education, of industry; the field of child welfare, of health; the problem of dependency, delinquency and crime—and now we realize that our various fields are but small lots, separated from each other only by imaginary lines, in one great general field where we must do joint battle for our common cause—conservation of our greatest national asset, our men, women, and children. We are at last conceiving a related program, one bringing into full recognition and participation all the lagging and neglected phases of human welfare. There has become a clearly defined recognition of this interrelationship of interests, of the necessity we are under to combine in a program of social action the best which extensive specialization along many lines can give.

We are realizing too that in the advance toward our common objective we must not permit defeats, even temporary, to occur through differences, however sincere, as to methods and means of reaching our goal. Surely we have had ample and painful proof of the way in which forces of reaction which would maintain the old order of privilege, go along together. They do not divide, and too often have "licked" us in the past because it is an outstanding characteristic of progressive, independent minded persons and groups to be sure their own particular way is best. And while we have debated ways and means, those clinging to the *status quo* of privilege for the few as against progress for the many, have crept up on us and circumvented us. Welding together all the varying points of view and the vital contributions that can come from all who have a common purpose into a solid and united front, is a very real challenge and fundamental responsibility we face today—one I think we can honestly say is being met with increasing effectiveness and intelligence. But we cannot slacken in our watchfulness and efforts to move forward with increasing coöperation and understanding. If eternal vigilance is the price of liberty, even more so is it the price of social progress.

We want to see full utilization of all our existing knowledge and tested methods of improving human conditions. We want to push forward, too,

* Read at the First General Session of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 7, 1935.

the borders of that knowledge and learn how further conservation of human resources may take place, realizing as we do the needless and tragic wastes that are all about us.

One of the numerous constructive and important steps in this direction is of particular interest to this conference —the National Health Inventory now being conducted by the U. S. Public Health Service as a Works Progress Administration project, under the direction of Dr. L. R. Thompson and George St. J. Perrott of the Service, and made possible, as are so many valuable and lasting pieces of work today, by the tireless interest in and devotion to human welfare on the part of the Works Progress Administrator, Harry Hopkins.

Many of you are famliiar with the plan and scope of the survey, but I would like briefly to discuss it here, not only because it needs your full understanding and interest, but also because of its direct bearing on, and contributions to, your own developing plans and responsibilities under the Social Security Act. The survey may be outlined under 5 heads:

1. An inventory of public health and medical facilities throughout the nation.

2. A survey of the extent and nature of disability from illness (including accidents), chronic diseases, and physical impairments, to be made in cities and rural areas in nineteen states. About 700,000 families are to be enumerated through a house-to-house survey in the 19 states. Some 6,000 persons will be employed in this canvass at its peak. The primary purpose of the survey is to secure, for a known population group, information on cases of illness attended by a physician and to obtain accurate statements as to diagnosis.

3. A measurement of the extent to which the health and medical facilities are actually used in different types of communities by persons suffering from various kinds of disabling illness and other physical or mental impairment.

4. The determination of sickness and mortality rates, according to occupation, based on reports of sick benefit associations.

5. A special survey to determine the incidence of the communicable diseases, the frequency of immunizations, and the completeness of reports to health departments.

The scope and methods for the above parts of the whole project are as follows:

1. An inventory of public health and medical facilities supplementing information now available. These health facilities include public health agencies, both official and unofficial; medical facilities, including the distribution of physicians, hospitals, and institutions; and the number and distribution of public health nurses, nurses in private practice, and nurses employed by visiting nurse associations, public and private. All existing information will be utilized, such as the data already published by the American Medical Association, the American Hospital Association, and other agencies including the American Public Health Association. The new data will be collected only where and when it is needed in order to fill up gaps in the knowledge and inventory of health facilities. This phase of the work will be coördinated with the illness survey but will not involve the employment of relief personnel in securing the information.

2. The extent of disability from disease and accident with special relation to chronic conditions and impairments. In this, the coöperation of the medical profession is necessary in order to supplement the enumeration of surveyed populations and of disability by technical information on the nature of disabling illness among those who have been attended by physicians.

Although recent morbidity studies have thrown light on the problem of chronic diseases and physical impairment, the data are not extensive enough or specific enough to give an adequate picture of the situation; hence it is proposed that in the 19 states sample groups of families in different types of communities should be canvassed for this purpose, utilizing carefully selected enumerators under the direction of trained supervisors.

It may be stated as a basic principle of the study that no phase of the project involves a duplication of already existing material. The study is being undertaken because present information, especially that dealing with

chronic disabling illness, is inadequate.

The survey follows closely the well established policy of the Public Health Service and essentially employs methods which have long been used by the Service. It is a continuation of activities which have been carried on for some time—in certain aspects over a period of nearly 20 years.

The goal of the survey is to develop facts that will eventually provide human beings with greater security against the hazards of disabling illness. Modern preventive medicine has made great strides in increasing our security against early death as evidenced by the fact that the expectancy of life has increased from about 40 years in 1870, to 60 years in 1935. This gain has been largely due to the prevention and control of the communicable diseases. It is now proposed to study the causes of chronic illnesses and disabilities which usually appear after middle age and which are so intimately associated with the economic and social status and habits of the people.

The survey provides national recognition of the fact that the health service of the future will probably be expanded to cover other fields than the control and prevention of the communicable diseases. With the coöperation of the medical profession, the control, prevention, and cure of all the ills of the flesh must be the ultimate goal of the health department.

Few of us realize what the presence of a serious or long-standing chronic illness in a household means as to the ability of the family to maintain itself on a self-supporting basis and procure the needed medical care. In fact, we cannot say from our present store of information how many families or individuals are afflicted with some serious chronic disease or impairment which results in partial or complete economic disability.

The survey will undoubtedly reveal that inadequate medical care is being received by families in the lower income groups and those on relief rolls. These under-privileged families have the greatest need of adequate care because of the high rate of disabling illness and impairment among them. A recent survey made by the Public Health Service in 10 cities showed that the disabling illness rate was 56 per cent higher among families hardest hit by the depression than it was among their more fortunate neighbors, and it showed too that these "new poor" received only about one-half the volume of physician's care that the comfortable group obtained. The discrepancy would have been even greater except for the large volume of free care received by the poor group.

Free service included service free to the family because paid for by state or local government as well as service given free by the physician. It is becoming widely recognized that physicians and hospitals cannot be expected indefinitely to render service to the indigent without remuneration, and that there must be public responsibility for the medical care of these unfortunates who otherwise must depend upon the charity of physicians. The health survey will provide information as to the amount of disabling illness among these people and the volume of medical services now being received, and will give for the first time an accurate picture of the needs both of relief clients and the large group of the "medically indigent" who are able to subsist but unable to finance a serious illness.

It is not necessary to describe to this conference the intimate and immediate effect on public health objectives of a period of economic depression such as we have been going through. Nowhere is sharp curtailment in expenditure more quickly felt in such times than in the public health field. The experience of

cities in 1934 shows that health budgets were reduced on the average about 20 per cent from the experience in 1931, reductions varying from 1 or 2 per cent to as high as 50 per cent. Where this reduction amounted to 30 per cent or more a practically complete breakdown of the public health protective facilities resulted.

On every side you who were daily and hourly in touch with the general widespread want, insecurity, and suffering translated into individual, concrete terms could bear testimony—and did—as to the appalling human deficit which we were piling up. The acute conditions of these recent years have revealed to us, however, how utterly inadequate provisions for health were even in those years glamorously referred to as the time of amazing prosperity.

In that peak year of our American material greatness, 1929, the people of the United States spent $3,656,000,000 for all forms of medical care, including those services purchased directly through taxes and other community funds. This is approximately $30 per capita per year, and in 1929 constituted about 4 per cent of the money income of the country. Certainly this expenditure could not be considered excessive for the population as a whole in view of the national expenditures in 1929 for tobacco, toilet articles, and recreation ($5,807,000,000) or for automobile use and other travel ($9,475,000,000). The proportion of the medical dollar which was spent for public health in 1929 was 3.3 cents.

Last week in Albany, at the conference on crime called by Governor Lehman, it was reported that our annual national crime bill is 14 billion dollars, about one-fourth the national income.

Other facts as significant and fundamental as these should be foremost in the mind of every one of us. In this same year of 1929, at the peak of the stockmarket boom, the average per capita income of all salaried employees at work was only $1,475. Eighteen million gainfully employed persons, constituting 44 per cent of all those gainfully occupied, exclusive of farmers, had annual earnings of less than $1,000; 28,000,000, or nearly 70 per cent, earnings of less than $1,500. Many people lived in straitened circumstances at the height of prosperity; a considerable number lived in chronic want. Throughout the 20's, the number of people dependent upon private and public charity steadily increased. At least one-third of all our people, upon reaching old age, are dependent upon others for support. Less than 10 per cent leave an estate upon death sufficiently large to be probated. These are but a few of the facts showing widespread social inequality reported by the President's Cabinet Committee on Economic Security.

By the end of the 1920's this want, dependency, and insecurity had reached a climax; had attained, one might say, such a high visibility that no one could longer be blind to its existence. We were shocked out of our long habit of complacency about ourselves and our general well-being, so much so that the impact of what we saw drove us to what we might call a defense terminology—we called what we saw an "emergency" situation. The millions of hungry, jobless men, the millions of undernourished children, the break-up of countless homes, and the breakdown of morale of countless citizens—we considered things suddenly emerging upon us out of an unpredictable catastrophe. But now, as the crest of the wave which broke over us diminishes and we see everywhere about us the acuteness of human suffering being lessened, as we see signs of conservation and building replacing waste and destruction, we realize more and more keenly

that a callous ignorance of, or indifference to, public affairs on the part of our citizenship was one of the chief factors in our social disaster, and that it cannot be tolerated in a progressive democracy.

So we come to a second important lesson we have learned, or are learning —that to a far greater extent, and with more vigor and alertness than ever before, we must function as citizens in public affairs, as well as specialists in our chosen work. There can be no progress except as it is the progress of all; no security unless there is general security; no enduring prosperity for any small or privileged group except as prosperity on a constantly widening and deepening base is built. Our own aims and dreams of achievement in specialized fields will come true only as we join with minds and hearts in the battle to make our country the thing our forefathers envisioned it to be, a place of equal opportunity to all and special privilege to none.

Twenty-four centuries ago, in another democracy, that of Athens, one of the greatest statesmen, Pericles, voiced a conception of a people's state which closely parallels our own. Above all, he emphasized the utter uselessness to Greece of citizens who did not participate in public life. His words hold much suggestiveness for us today.

With full appreciation of the heavy and unending tasks this challenge calls us to, we can in all honesty feel that we are on the rising trail, that we can look to an immediate future safeguarded, as the present is not, against certain devastating insecurities which individuals in our complex, highly organized state are powerless to cope with. Unless there is social security for the great mass as well as for the few, then our liberty is little less than mockery. We know that we have written into the law of our land the principle that human welfare, human conservation, is definitely a charge on government, and that in the time to come men and women shall not be broken in spirit and made a social liability because of their advancing years or inability to get work. The terror of dependent old age and involuntary idleness is to be, we have pledged, to some extent at least, lifted from our citizenship.

The youth of today, by whose minds and hearts and hands tomorrow's future will be shaped, we have declared must not have their most impressionable and important years dominated by inadequacies both physical and spiritual. Nine million children knowing only relief homes have made up 40 per cent of the total relief load these recent years. They have not been having the sort of chance we pride ourselves all American children are entitled to. So we have, as an organized society, pledged ourselves to ways and means by which their fathers may have guarantees of their right to participate, through free organization, in our industrial development, guarantees that decent wages and working conditions may reëstablish the American home. We have taken our stand against the needless and preventable loss of life and health costing now in money terms some 2½ billions a year. We have outlined and ratified, as a people, measures to overcome these wastes and to establish through national, state, and local coöperation, policies of conservation in their stead.

We are "on our way"—forward; but the knowledge that we are, must serve only to make us more vigilant to safeguard gains which have been made, and more aggressively determined to continue our advance against waste and special privilege, and to stand up to be counted among the forces seeking to conserve human life and human happiness.

The Social Security Act in Its Relation to Public Health*

C. E. WALLER, M.D., F.A.P.H.A.
Assistant Surgeon General, United States Public Health Service, Washington, D. C.

IN an address made during the early part of his present term, President Roosevelt, in discussing his program for economic recovery, said: "Among our objectives I place the security of the men, women, and children of the Nation first." With a view to devising a sound plan for a program directed toward this objective the President later appointed the Committee on Economic Security to study the social and economic conditions which affect individual security. The Economic Security Bill, which eventually was enacted into law as the Social Security Act, was based upon the recommendations of this committee formulated in the course of its studies over a period of several months.

The general title of the Social Security Act approved by the President on August 14, 1935, sets forth the purpose of the Act as follows:

> To provide for the general welfare by establishing a system of federal old-age benefits, and by enabling the several states to make more adequate provision for aged persons, dependent and crippled children, maternal and child welfare, public health, and the administration of their unemployment compensation laws; to establish a Social Security Board; to raise revenue; and for other purposes.

Specifically the Act provides for federal old-age benefits; for grants to the states for old-age assistance, unemployment compensation administration, aid to dependent children, aid to the blind, and maternal and child welfare; and for public health work, including the authorization of grants to states for aid in the development and maintenance of state and local health services and an annual appropriation to the Public Health Service for additional research activities.

Grants to the states authorized for maternal and child welfare include assistance in the maintenance of maternal and child health services, care of crippled children, child welfare services, and vocational rehabilitation.

For the administration of grants-in-aid features of the Act relating to old-age assistance, unemployment compensation, and aid to dependent children and the blind, the Act created a Social Security Board. The Children's Bureau of the Department of Labor is charged with responsibility for administration of grants for maternal and child health services, care of crippled children, and child welfare services; the Office of Education of the Department of Interior will deal with federal aid for vocational rehabilitation, and the Public Health Service will administer the grants to states for aid in establishing and maintaining state and local health services.

It is to be assumed that every feature of the Social Security Act will have some relation, either directly or indirectly, to the public health. Certainly the greater feeling of economic security

* Read before a Special Session under the auspices of the Health Officers Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 8, 1935.

to be experienced by the wage earner and the individual looking forward to old age should contribute in some measure to better mental health; and it seems reasonable to believe that relief from want and deprivation in childhood and in the time of unemployment should lessen, to some extent at least, the hazards of disease resulting from lack of proper nutrition and the lack of means of providing at least some medical care. However, I take it that you are interested at this time chiefly in the provisions of the Act that deal specifically with health activities.

Under the Public Health Work Title of the Act authority is granted for:

1. An annual appropriation of not to exceed $8,000,000 for the purpose of assisting states, counties, and health districts and other political subdivisions of the states in the establishment and maintenance of adequate health services, including the training of personnel for state and local health work.

2. An annual appropriation of not to exceed $2,000,000 to the Public Health Service for research activities of the Service and for the expense of coöperation with the states in the administration of the federal funds to be granted for aid in the establishment and maintenance of state and local health services.

Responsibility for allotment of the proposed appropriation of $8,000,000 for state and local health services is placed upon the Surgeon General of the Public Health Service. In making the allotments to the states, however, the Surgeon General must take into account certain major factors; namely, the relationship of the population of each state to the total population of the United States as a whole; the financial needs of certain states, or the inability of the states to meet their health problems without financial assistance; and special health problems imposing unusual burdens upon certain states. The weighting and application of these factors in the distribution of the fund will be in the discretion of the Surgeon General, subject to the approval of the Secretary of the Treasury. It should be noted particularly that the allotments are to be made to the states and that the Public Health Service cannot deal with local authorities either in the distribution of the fund or in the consideration of plans for the work.

The entire appropriation for aid to states each year must be allotted at the beginning of the federal fiscal year. However, the fact that an allotment has been made to each state will not necessarily mean that each state actually will receive the full amount of its *allotment*. The Act provides that *payments* to the states from allotments shall be determined by the Surgeon General, subject to approval by the Secretary of the Treasury, in accordance with regulations previously prescribed by the Surgeon General after consultation with a conference of the State and Territorial Health Authorities. Once funds have been allotted and paid to any state, they must be expended solely for the establishment and maintenance of health services and in accordance with plans presented by the health authority of such state and approved by the Surgeon General.

In anticipation of the enactment of the Social Security Act before the close of the latest session of the Congress, the Surgeon General laid before the Annual Conference of State and Territorial Health Officers with the Public Health Service held in Washington on June 17, 18, and 19, a suggested program which might serve as a basis for regulations to be promulgated by the Surgeon General governing the conditions under which payments from allotments would be made to the states. This program, with some modification in respect of details, was approved by the Conference and recommended to the Surgeon General for adoption.

With respect to general objectives of the program and plans for organization of the work to be carried out by the

states with the financial aid expected under the provisions of the Social Security Act, the report approved by the Conference of State and Territorial Health Officers contained in part the following recommendations:

It is the aim of the Economic Security Act, among other purposes, to stimulate a comprehensive, nation-wide program of public health, financially and technically aided by the federal government, but supported, so far as possible, and administered by states and local communities.

The $8,000,000 annually appropriated for aid to states will be available for the following purposes:

1. Aid to state and territorial health departments for strengthening the service divisions and in providing adequate facilities especially for the promotion and administrative guidance of full-time city, county, and district health service.
2. Aid through state and territorial health departments for the development of city, county, and district health departments.
3. Training of public health personnel.

However, no state or territory should be eligible for aid unless and until it shall have provided or provides in its proposed plan for certain essentials of health organization hereinafter set forth.

Grants in aid to existing state or local projects should be supplemental to funds now being expended, and in no case should be used to replace existing state or local appropriations to such projects for the purpose of relieving state or local authorities from expenditures now being made.

Although it is recognized that many state and territorial health departments conduct a number of important specialized activities, for the purpose of allocation of funds under this Act, no state or territorial health department should be regarded as properly organized which does not provide as a minimum on a full-time basis the services listed below:

a. A qualified full-time state or territorial health officer.
b. Adequate provision for the administrative guidance of local health services.
c. An acceptable vital statistics service. This should include an approved plan for the registration of births and deaths and the prompt forwarding of information relative thereto to the Public Health Service.
d. An acceptable state public health laboratory service.
e. Adequate services for study, promotion, and supervision of maternal and child health.
f. Special services for the study, promotion and guidance of local activities for the control of preventable diseases and for health promotion. This should include an approved plan for the collection of reports of notifiable diseases and the prompt forwarding of information relative thereto to the Public Health Service.
g. Services for study, promotion and supervision of environmental sanitation.

Provided: that exceptions to this requirement may be made where it shall be determined by the Surgeon General that one or more of these services are uneconomical or unprofitable in a given state.

Existing deficiencies in minimum essentials of organization at least temporarily may be supplied through coöperative budgets developed with the use of allocated funds, provided that the amount used in such development of essential services does not exceed 20 per cent of the funds available from federal sources to be allocated to such state or territory. Provided, further, that funds allocated by the Public Health Service may be used in the building up of these essential services beyond the point of minimum requirements, particularly for the stimulation and supervision of local health service in accordance with the provisions hereinafter set forth and acceptable to the Public Health Service.

Subject to these requirements, the U. S. Public Health Service should consider expenditures proposed by a state for any health activity on which the state health agency now expends state funds or is authorized by law to expend such funds; the U. S. Public Health Service should reserve the right, however, to disapprove any proposed project or to decrease any item of proposed expenditure if in its opinion the purposes of the Act would be better attained thereby.

The basis of a satisfactory local health service is a well organized health department, adequately financed, with trained personnel, supported by suitable laws and ordinances, by favorable public opinion, and by all professional groups. To this end financial aid is to be granted, through the state and territorial health departments, toward the development and maintenance of adequate city, county, and district health organizations.

Allotments of funds should be made toward the establishment or maintenance of city, county, or district health services only when the following basic principles of organization and services in a community are met:

1. The public health services of the city, county, or district shall be under the direction of a whole-time health officer.

2. The personnel of the city, county, or district health department should include, in addition to the full-time health officer, such medical assistants, public health nurses, sanitation officers, and clerks as will insure at least a minimum of effective health service commensurate with the population and health problems of the area concerned.

The U. S. Public Health Service in its allocation to states should strive to foster the development of health units having a minimum personnel of one full-time health officer, two nurses, one sanitary officer and one clerk. When a district health unit comprises more than one county or parts of counties there should be at least one public health nurse and one clerk for each county or similar political unit of government embraced in the health district. In areas whose economic status does not justify this desired minimum the U. S. Public Health Service may feel free to modify these standards.

Personnel inclusive of health officers, nurses, sanitation officers, sanitary engineers, and other public health personnel employed under these grants-in-aid should meet the standards of qualifications established and recommended by the Conference of State and Territorial Health Officers.

The success of the Economic Security Act in the field of public health will depend upon the availability and employment of competent and professionally trained personnel. It is therefore recommended that funds be allocated to the states to assist in developing trained personnel for positions to be established for the extension of state, city, county, and district health organizations, and that minimum qualification standards for the necessary personnel be adopted by the Conference of State and Territorial Health Officers to serve as one of the conditions upon which the federal funds provided in this Act shall be allocated to the states for state and local health services.

The Conference at the same time prepared and recommended a standard of technical qualifications for public health personnel; recommended the setting aside of a special sum to be distributed among the states for the training of personnel as a part of the allotment to each state; suggested a procedure for the establishment of regional training centers for short courses to meet immediate personnel needs; and set up a committee to consider and prepare standard record systems and report forms for the use of state and local health authorities.

In formulating qualification standards a special committee of the Conference followed closely the report of the Committee on Professional Education of the American Public Health Association.

In preparation for carrying out the provisions of the Public Health Title of the Act when the first appropriation becomes available, the Public Health Service has drafted and submitted to the Secretary of the Treasury for approval proposed regulations governing the allotments and payments to be made to the states. It is anticipated that these regulations will be passed upon by the Secretary within a few days. While they cannot, for obvious reasons, be discussed in detail at this time, it may be said that the draft submitted to the Secretary is substantially in conformity with the recommendations of the Conference of State and Territorial Health Officers so far as general policies may be concerned. In brief, these proposed regulations set up the amounts of the state aid appropriation to be set aside for allotment on the basis of population, financial need, and special health problems, respectively, through the weighting and application of these factors; provide for the matching of certain portions of the allotments with existing and new state or local appropriations as a condition upon which payments from allotments shall be made; require the submission of plans to be approved by the Surgeon General prior to the certification of the payments; require the submission of budgets to show the extent of state or local participation in support of the work; and call for periodic financial and statistical reports to show the expendi-

tures made from all sources as well as a brief summary of the progress of the work.

While the Public Health Service, realizing the desirability of preserving the independence of the states in matters affecting public health wholly within their boundaries, will not lay down rigid requirements with respect to either organization or qualifications of personnel, it will require that the general plan submitted by each state shall provide for efficient administration and sound expenditure of the funds. The Public Health Service will also recommend to the several states the plans of organization for state and local health services and the standards of qualifications of personnel recommended by the Conference of State and Territorial Health Officers.

THE TRAINING OF PUBLIC HEALTH PERSONNEL UNDER THE PROVISIONS OF THE SOCIAL SECURITY ACT

Manifestly if public health work is to meet successfully the constantly changing demands there must be, first of all, aims and objectives that are practical, reasonably susceptible of achievement, and productive of results. Moreover, there must be a willingness to adjust principles to meet the newer conceptions of what is required. Obviously it is upon the public health worker, whether he be the state or local health officer or other member of the staff, that the burden of successful effort rests.

There has been a great deal of undesirable and unnecessary unrest among the personnel of health departments. In many organizations, whether state or local, there have been disturbing changes of personnel. In some instances, due to political expediency, competent workers have been unceremoniously dismissed while incompetent individuals have been retained. Only too often the funds for the maintenance of efficient health services have been curtailed or withdrawn as the first rather than the final step in an economy program. Needless to say, such interference with plans and personnel has created an impression that public health work is a semi-permanent activity of dubious value that may be turned off and on like a controlled stream of water. The time is now at hand for removing permanently the hindrance to an enlightened and progressive public health viewpoint. In no way can this be better done than by assuring adequate salaries, undisturbed tenure of office for competent persons, and sufficient training to insure efficient service. The belief may be expressed that when public health workers become proficient in their professions through proper academic and practical training that commensurate salaries and prolonged tenure of office will follow as a matter of course. A health department should be an integral part of the local government, on an equal footing with school, justice, and police administrations. The opportunity offered for the training of public health personnel under the provisions of the Social Security Act will undoubtedly aid in attaining the objectives just mentioned.

Public health work should be a profession, as clearly defined as that of law, medicine, engineering, pedagogy, or other specialties. Moreover, a public health career should be as attractive, lucrative, and permanent as any other professional field. While the opportunities for financial advancement may not be as promising as elsewhere, there is always the prospect of affording service to humanity, through the prevention of unnecessary illness and premature death.

Recognizing that the training of public health personnel is a pivot around which the health provisions of the Social Security Act revolves, the Conference of State and Territorial Health

Officers, which met with the Public Health Service in June, 1935, devoted a goodly share of its attention to this phase of the subject.

The Conference recommended that $1,200,000, or 15 per cent of the proposed $8,000,000 annual appropriation, be set aside for the prompt development of qualified personnel designed to strengthen and enlarge the staffs of state and local health departments. In furthering these objectives it was recommended that the Public Health Service proceed to develop suitable training centers at existing institutions, conveniently located to serve certain groups of states, and that the cost of aiding these institutions where necessary be prorated among the states to be served by the proposed centers. Furthermore, it was suggested that funds be granted to the several state departments of health in accordance with their needs, as certified by the state health officers, for the purpose of paying living stipends, tuition, and traveling expenses of trainees who would be selected by the state health officers for attendance upon courses to be given at the training centers.

It is desired to emphasize that selections of public health trainees are to be made by state departments of health and not by the Public Health Service. Moreover, it is expected that positions will be provided in state and local health departments for those who have satisfactorily completed the course of training. Therefore, it is essential that the nominations of trainees be correlated with the plans and financial resources of each of the state departments of health.

So far as may be practicable it is the intention to utilize existing public health training centers. However, when necessary, the establishment of new facilities for public health training in existing institutions will be encouraged. It is planned to establish training facilities as they may be needed to meet the demand created by the state departments of health, *i.e.*, the number and kind of trainees will be determined by the state departments of health, and the facilities will be adjusted to the demand for service. In the beginning attention will be given chiefly to the development of facilities for short courses to meet the emergency need.

Provision will also be made for a center in which Negro nurses may secure public health training. While the location and facilities to be provided will depend upon the number of nurses nominated for training, it is expected that a number of state departments of health, especially those having large Negro populations, will take advantage of this opportunity.

To provide for additional field training after instruction at the training center has been completed, funds will be available for augmenting the staff of a local health unit selected by the health officer in each state to serve as a field demonstration station.

The rather sudden and rapid expansion of public health work contemplated under the provisions of the Social Security Act will create an immediate demand for considerably more personnel than is at present available. Therefore, it becomes necessary to consider the length and content of training courses that should be offered. Many of the established schools of public health feel that their paramount duty is toward students taking regular and full courses of instruction. However, in view of the necessity for training a considerable number of workers within a comparatively short space of time the establishment of short courses has received considerable attention. In general it is believed that 2 months of systematic instruction should be regarded as a minimum. An additional month of apprenticeship under a well

trained and experienced health officer, preferably in the state in which the trainee expects to work, should be provided. It should be possible for a student taking a short course to receive credit which can be utilized in securing a certificate or degree when further instruction is taken.

While there may be some difference of opinion regarding the content of short courses for health officers it is believed that biostatistics, epidemiology, environmental sanitation, and administration should be emphasized. In schools serving southern states medical zoölogy should be included. In setting up training schools for nurses the institutions meeting certain requirements in regard to theoretical and practical instruction, according to the standards of the National Organization for Public Health Nursing, will be favored. Courses for sanitarians of the different grades will be organized along the same general lines, the course being worked out on the basis of experience. However, all trainees of whatever grade, will be expected to be well grounded in the principles of public health administration.

Another possibility in connection with the training of public health personnel is that of supplying instruction to persons already employed. Through this policy older employees would be enabled to secure new and up-to-date information as to public health procedures and thereby increase their personal efficiency and value to the organization in which they are employed. It may also be possible to use trainee reserves in local health units while regular employees are attending special short courses.

The prospect of strengthening state and local health administration through the medium of allotments from the Social Security appropriation is an alluring one. By no means the least important contribution to the public health forces will come through the training of personnel.

SIGNIFICANCE OF PUBLIC HEALTH LEGISLATION IN THE SOCIAL SECURITY ACT

It is evident that the Congress, in considering this legislation, deemed it within the intent of what is known as the "welfare clause" in Paragraph 26, Section VIII, Article I, of the federal Constitution. In this respect the Public Health Title of the Social Security Act differs from most of the existing law relating to the functions of the Public Health Service, which has for its authority the power granted by the Constitution to the Congress to regulate commerce. This is regarded as being particularly worthy of note. For the first time in the history of the public health movement in this country, the Congress has made a declaration of permanent policy under which it assumes in part responsibility for protection of the health of the individual within the state and has made provision for participation of the federal government in the establishment and maintenance of administrative health services for this purpose. The significance of the authorization of an appropriation of $11,800,000 for aid to the states for health services therefore lies not so much in the amount of federal aid provided for as in the effect of this enunciation of federal policy. It is obvious to everyone that $11,000,000 or $12,000,000 granted to the states by the federal government will not alone go very far toward meeting the need for more adequate local health service in this country; we need at least one dollar per capita, per year, or $126,000,000 from all sources, to provide even the minimum of service required, and more for adequate service. The most important result of the Social Security Act in the field of public health should be the awakening of state and

local authorities all over the country to the need for devoting more attention to the public health and the stimulation of such authorities to the assumption of greater responsibility in making provision for adequate facilities for health protection.

With the exception of that part of the law dealing with crippled children, and possibly the provisions authorizing aid to states for maternal and child health services, the Social Security Act leaves one of our important public health problems as yet among the social security problems in the solution of which no substantial steps have been taken—the problem of medical care for the poor and for the low-income family that can pay something but not the whole cost of medical and hospital service which it requires.

THE MEDICAL CARE PROBLEM

I find myself personally unable to hold with some others to the doctrine that the working out of some solution of this problem is not a part of the public health problem. I have been unable to see the soundness of the distinction some of us have maintained between what we have called "public health work" and responsibility for seeing that adequate medical care is provided for those who cannot afford it. Nor can I see any good reason for assuming that the term "public health" should apply only to preventive measures.

Fifty years ago most of our mortality was caused by the acute communicable diseases; it was but natural, therefore, that our early activities in the protection of the public health were centered largely on the control of communicable illness. But the picture has changed and today we find our problems more and more in the prevention of disability and death from diseases that will not yield to environmental sanitation and immunization. I venture to predict that the most important activity of the health department of the future will lie in the medical care field, at least in assumption of responsibility for meeting the problem and of leadership in working out the solution.

I am not prepared to advocate at this time that the health department shall actually undertake to render with its own personnel all medical care for the poor. I feel that there is and should be a place for the practising physician in a medical relief program wherever economic limitations will permit the utilization of his services. On the other hand, the provision of adequate medical care for the poor is a public duty, and the private physician can no longer be expected to carry the burden without adequate compensation. But I do not believe we shall have a satisfactory solution of the problem until the health department takes the leadership in working out with the medical profession a plan that will serve the need and at the same time make a place for the services of the private doctor. There can be no doubt of the need for more medical service, nor of the existence of a vast reservoir of potential service not now utilized; what we lack is the mechanism for putting this service to work.

THE RESPONSIBILITY OF STATE AND LOCAL AUTHORITIES

In conclusion, I should like to give special emphasis to just one point that may not be clear in connection with the provisions of the Social Security Act authorizing grants to states for public health work. The Act does not appropriate the funds—it simply authorizes the Congress to appropriate in any one year amounts *not to exceed* the sums set forth in the Act. Therefore the Congress is not bound to appropriate the amounts authorized and may appropriate so much or so little,

within the limitations of the Act, as it chooses to make available. There can be no doubt that in determining from year to year what the appropriations shall be, the Congress will be influenced by evidence of efficient administration and accomplishment or by the lack of it. We shall all be on trial. If our accomplishment should justify it, there is a possibility that the federal government may even increase its participation in the future; if we should fail, we shall not even hold the appropriations now authorized.

In passing on to the states the responsibility for organization of the work and for qualifications of personnel, in the interest of preserving their independence, the Public Health Service rightly places largely upon them the responsibility for accomplishment and for the demonstration to the Congress that the grants from the federal government are being wisely expended. May I, therefore, urge those of you who will participate in the administration of these funds to see that the highest standards of professional service are maintained, that appointments are not made solely because of political considerations or personal friendship, and that no dollar is wasted. After all, the appropriations will be yours, and likewise the responsibility for preserving them.

Nutrition and Child Health*

A. B. SCHWARTZ, M.D.

Department of Pediatrics, Marquette University Medical School, Milwaukee, Wis.

AS far as the infant is concerned, there may be justification for the idea that nutrition has to do only with foods and food disturbances. Beyond infancy, such a conception of nutrition has neither physiologic basis nor practical usefulness. The White House Conference Report defines nutrition as "a study of the food substances and of the biochemical processes which utilize them." "Good nutrition," continues the Conference Report, "should mean that these biochemical processes are proceeding correctly."

When we speak of good nutrition we imply good health. In order for biochemical processes to function normally, it is necessary that every tissue in the body that has to do with these biochemical processes must function normally. The teeth must be normal, and so must the saliva, the stomach and its juices must be normal, the heart and lungs, the excretory organs, and the nervous system must be normal. It is equally obvious that brief upsets of any of these and other structures may not recognizably upset nutrition.

Nutrition problems as seen in public health work are problems related to general health and are influenced by factors often remote from physiology alone. They are in fact problems of biology, psychology, and sociology.

Is there a way of measuring nutrition?

The idea of weight as a criterion of health is fallacious. Height and weight tables, despite much scientific protest, continue to play too large a part in child health work. It is reported that the largest return on any investment in the Century of Progress Exposition was that from the "Guess

* Abstract of paper read at a Joint Session of the Child Hygiene and Food and Nutrition Sections of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 7, 1935.

Your Weight" scales, and an editorial writer in the *Journal of the American Medical Association* remarks that "normal weight does not necessarily mean good health, nor do deviations from the average or mean always indicate poor health." Physiologic objections to the weight-height table as a measure of good or bad nutrition do not need to be restated. Blackfan in his "Approach to the Subject" in the White House Conference publication on Nutrition makes the pointed comment, "The distinction between an activity of processes and the physical state which they produce justifies disregarding the static and dimensional criteria of growth and development."

The nutritional state as popularly measured by the height-weight relationship has attained an undue importance in the parents' mind and in our own daily work. It is high time that we began to teach that we do not measure health with a pair of scales. It is not important to know whether the weight and height of the particular child coincides with the average weight and height of a thousand other children. What is important to know is whether the weight and height of this child is within the limits of health for this individual child.

Weight and height tables of whatever kind, or the recently devised A C H index of Franzen and Palmer are useful as screening methods, roughly selecting those that need further examination. Represented as such, the A C H index seems the more selective method for large groups of children.

A good physical examination is a basic necessity in the study of child health. This, too, is not enough. Personal observation of the child in the home, a knowledge of his environment, an understanding of his attitudes in school and at play are all necessary in the appraisal of the child's health.

It is high time that we begin examining children and distributing information with a conscious realization of individual variations. Equally important as individualized physical examination is the need for individualized instructions by child welfare workers.

If we are going to do nutrition work among children, let us see to it that we do it with a proper understanding that the child's nutrition problems are not only problems of vitamins and mineral salts but also problems of psychology and sociology. Enough people should be trained in child health, in home nursing and in social service to provide a more adequate service. The children of families able to pay for such service should be referred to their private physicians. The welfare station that takes care of this group of children is not only wasting community funds, but cluttering up its own work, and thereby giving less efficient service to those who do need it.

Much waste of a family's income could be eliminated by a proper attention to this problem in a nutrition clinic.

Useless vitaminizing should be part of the child health clinic's concern. The importance of the respective vitamins in child health needs no restatement. Their discovery and application constitute one of the most thrilling chapters in medicine. Eventually, their isolation as crystalline substances will further increase our understanding of their usefulness. Each vitamin has a recognized value sufficiently established to make it an essential implement in any health program. This does not make necessary the indiscriminate prescription of vitamins for conditions in which their usefulness is still in the speculative zone.

Vitamins are important but they are not the whole story. A diet list will not relieve all the defects of nutrition.

Engineering Control of Occupational Diseases*

J. J. BLOOMFIELD, F.A.P.H.A.

Sanitary Engineer, United States Public Health Service, Washington, D.C.

THE control of occupational diseases lies chiefly within the sphere of two types of workers, the physician and the engineer. It is within the province of the physician to diagnose occupational diseases and primarily to recognize the existence of those diseases due to the factory environment. Based on the findings of the physician, the engineer is in a position to learn where control measures are to be initiated. His functions are two-fold: First, he must study the local plant conditions which have been shown to be detrimental to health and by precise quantitative measurements determine the extent of the hazard. Second, once the nature and degree of the hazard have been demonstrated, the engineer must consider ways and means for controlling or minimizing the dangerous condition and for studying the effectiveness of these measures.

It is the purpose of the present contribution to discuss the various engineering methods which may be applied in the evaluation and control of industrial health hazards.

THE STUDY OF THE WORKROOM ENVIRONMENT

Certain preliminary steps of fundamental importance must be undertaken in order to serve as a guide in the more detailed studies which may be indicated. These consist of the sanitary survey and the occupational analysis of the workroom.[1]

The sanitary survey of a workroom consists of noting provisions for ventilation, illumination, fire protection, accident protection, exposure to specific poisons, such as dusts, fumes, vapors, and gases, fatigue, and so on. Thus, the survey serves as a guide in establishing which hazards require further study in the form of actual quantitative determinations.

The occupational analysis permits one to learn of the activities involved and the particular hazards associated with each occupation, and the number of persons in each occupation. Perhaps a typical illustration from actual experience will demonstrate the value of the preliminary survey of an industrial establishment.

Studies of industrial morbidity among iron and steel workers conducted by this office showed that pneumonia, in all forms, occurred in nearly twice the number among these workers that it did among employees of other industries, during a 3 year period of observation.[2] A 5 year inquiry into the causes of high pneumonia rates among iron and steel workers in a representative mill disclosed the fact that the largest number of cases occurred in certain departments, such as in the blast furnace and

* Read before the Industrial Hygiene Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 9, 1935.

TABLE I

FREQUENCY OF PNEUMONIA ACCORDING TO OCCUPATION AND IN RELATION TO THE NATURE OF INDUSTRIAL EXPOSURE INVOLVED IN THE BLAST-FURNACE DEPARTMENT, 1924–1928

Sections and Occupations	Nature and Extent of Industrial Exposure [1]: Heat With Wide Changes in Temperature	Strenuous Work	Out-door Work in All Kinds of Weather	Gases and Smoke	Dust	Annual Number of Cases of Pneumonia per 1,000 Men	Number of Cases of Pneumonia: Actual	Expected [2]	Approximate Number of Years of Life Observed
All sections						14.0	36	10	2,578
Stacks and stoves (casting section)						27.2	17	2	624
Keeper	**	**	*	**	*	9.3	1	0	120
First and second helpers	**	**	*	**	*	41.5	12	1	289
Blowers	*	0	*	*	0	0.0	0	0	52
Hot blast men	*	*	**	**	*	16.7	2	1	120
Stove cleaners	*	*	**	**	**	46.5	2	0	43
General labor section and car dumper laborers	0	0	**	0	0	30.7	15	2	489
All other sections [3]	*	*	*	*	*	2.7	4	6	1,465

[1] Symbols for extent of exposure:
0 No exposure
* Slight or occasional exposure
** Heavy exposure

[2] Number expected from the rate per 1,000 men in "all other departments" in Table VII.

[3] Eight per cent of the men heavily exposed, 23 per cent slightly or occasionally exposed to heat with wide temperature changes. To strenuous work, no one was heavily exposed and only 5 per cent had occasionally to work strenuously. To outdoor work in all kinds of weather, about 8 per cent of the men were heavily exposed, 80 per cent slightly or occasionally exposed. To gases and smoke, about 5 per cent were heavily and 25 per cent slightly or occasionally exposed. About 1 per cent of the men were heavily exposed to dust and about 55 per cent slightly or occasionally exposed.

open-hearth steel mills. When one realizes, however, that these departments contain anywhere from 60 to 100 different occupations, the task of a preventive program is almost a hopeless one, unless definite information is obtained concerning such important items as (1) the number of persons, (2) the activities, (3) the health hazards, and (4) the incidence of pneumonia for each occupation. Such information is available from a preliminary sanitary and occupational survey.

For example, in the study mentioned, it was found that the most important exposures associated with the various occupations were: heat, with wide changes in temperature, gases (sulphur dioxide, hydrogen sulphide and carbon monoxide), dusts, strenuous work, and outdoor labor in all kinds of weather. Table I presents the frequency of pneumonia according to occupation in the blast furnace department, in relation to the nature of the exposures, during the period of 1924–1928. It is quite obvious that the highest pneumonia rates occurred among those occupations exposed to one or more of the potential hazards cited. The actual number of cases for those occupations not associated with these five exposures (all other sections) was found to be even less than the expected cases of pneumonia for such workers. Such a preliminary survey indicated that, in the blast furnace department, attention should be centered on occupations in the casting and general labor sections, in an effort to determine the degree of exposure to gases, dusts, extreme temperature changes, and so on. Such studies are carried out by the engineer, whose task it is to determine the extent of the occupational exposure to the materials and conditions enumerated. Once these factors have been evaluated, the engineer is in a better position to initiate control measures for the minimization of the hazards demonstrated to be deleterious to health.

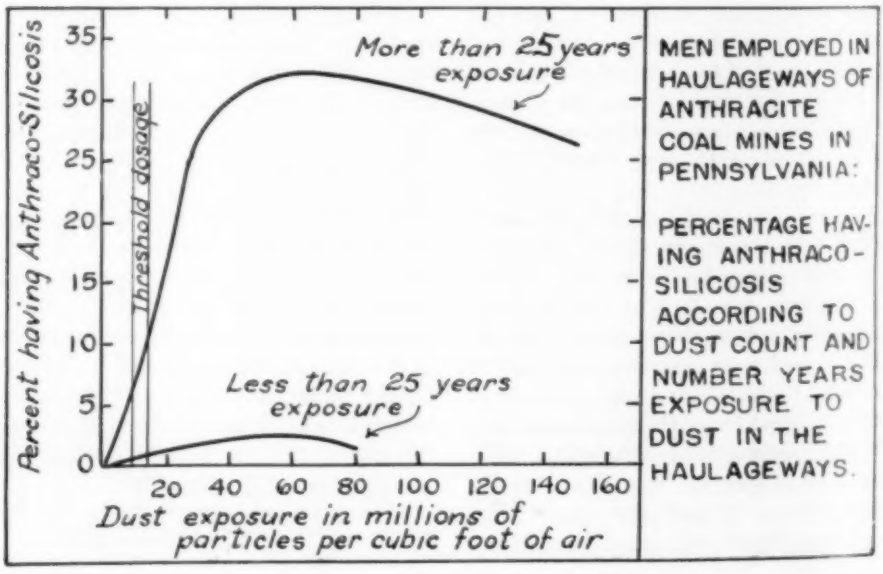
The magnitude of the problem confronting the engineer in industrial hygiene is as large as it is varied. According to a recent analysis made by Dublin and Vane,[3] there are some 94 groups of industrial poisons in the United States, associated with about 900 different occupations. In the limited space allotted for the present discussion it will only be possible to point out a few of the major problems in this field with which the engineer is concerned.

The subject of the health of workers in dusty trades has been receiving considerable attention from students of industrial hygiene and others interested in the various phases of this problem. When one realizes that the workmen employed in the dusty trades comprise the largest group exposed to any one industrial hazard it is quite apparent that the importance of this problem has not been overestimated. Furthermore, it is by now fairly well established that exposure to certain kinds of dust has increased the mortality rate from respiratory diseases.

As a result of the studies conducted by this office and other agencies, it has been fairly well established that a knowledge of the properties of a given dust which determine its capacity to produce pulmonary pathology is essential. Numerous investigations of the industrial dust problem indicate that these properties are the chemical and mineralogical composition of the dust, its concentration in the industrial atmosphere, and its particle-size. It is within the province of the engineer to determine these factors in the industrial dust problem. How important these determinations are in such studies is well exemplified by the results of our recent investigation made among anthracite coal miners.[4]

In this particular investigation it was found that the various mine and surface workers were exposed not only to different concentrations of dust but also to dusts of varying composition. For this reason, in the present discussion, data will be given for a group of workers inhaling a dust of the same composition. For example, the engineering study disclosed that workers in the mine haulageways were exposed

FIGURE I


Percent having Anthraco-Silicosis
35
30
25
20
15
10
5
0
More than 25 years exposure
Threshold dosage
Less than 25 years exposure
20 40 60 80 100 120 140 160
Dust exposure in millions of particles per cubic foot of air
MEN EMPLOYED IN HAULAGEWAYS OF ANTHRACITE COAL MINES IN PENNSYLVANIA:
PERCENTAGE HAVING ANTHRACO-SILICOSIS ACCORDING TO DUST COUNT AND NUMBER YEARS EXPOSURE TO DUST IN THE HAULAGEWAYS.

not only to the dust arising from both coal and rock working operations but also to the sand dust used on the rails to obtain traction. A study of the composition of this dust showed it to have a total silica content of 34 per cent, a quartz content of 13 per cent, with 58 per cent of the dust consisting of coal. Due to the relatively low dust concentrations in the haulageways, the mine operators did not suspect a health hazard among the men employed in the gangways.

Figure I shows the percentage of men having anthraco-silicosis under different average dust concentrations and number of years' exposure to such concentrations. When the duration of employment or exposure was less than 25 years, only a negligible proportion of the men developed anthraco-silicosis. There were, in fact, only 3 cases among the 408 men examined whose length of employment was less than 25 years, a percentage of less than 1 for this group as a whole. When the exposure exceeded 25 years, about one-fourth of the men were found to have anthraco-silicosis. The curve of cases mounted rapidly from an exposure of 10 to 20 million dust particles per cu. ft. of air to 80 million particles, at which exposure about one-third of the men were found to have this disease. It is of interest to note that the curve of cases declined slightly under higher dust exposures. Although one cannot state definitely the reason for this tendency, it may be due to the factor of selection.

This single example concerning one of the important problems in industry illustrates the rôle played by the engineer in the field of industrial hygiene. In the present case not only was the study of the degree and nature of the dust exposure valuable in determining the cause and extent of the hazard, but it served as an aid to the solution of the problem; namely, the removal of the dust to a level indicated as safe by the results of the investigation. The graph also shows the approximate threshold dosage, which may be set tentatively at 10 to 15 million particles per cu. ft. for this type of dust. Only 4 cases of anthraco-silicosis were found among the men exposed to 10–20 million particles and none was found at an exposure of less than 10 million particles. With such information, the engineer is in a position to consider ways and means for the suppression of the dust in the haulageways to the concentration which is indicated as safe.

In the studies of occupational diseases due to the inhalation of certain toxic dusts, such as lead and radium, the engineer has also played an invaluable rôle. In a recent study of lead poisoning among storage battery workers, conducted by the Public Health Service,[5] it was of importance to determine the relationship between the amount of lead dust inhaled by the men and the incidence and severity of plumbism. Such a study is valuable in that it may indicate the maximum amount of lead which may be inhaled with impunity. Table II shows the fundamental correlation between the lead in the air and the rate of plumbism in the major departments of the plant in which our study was made.

TABLE II

LEAD EXPOSURE AND MAXIMUM MONTHLY RATE OF INITIAL COMPENSATION CASES FOR PLUMBISM

Department	*Mg. of Lead per 10 cu. m. of Air*	*Maximum Monthly Rate (per 100)*
Mixing	120.0	44.0
Pasting	50.0	12.0
Burning	5.7	4.4
Casting	1.2	0.18

It is evident that a close correlation exists between the lead exposure in different departments and the risk of developing a case of lead poisoning. Of considerable interest is the fact that a more detailed analysis of the clinical and dust findings indicated that 1.5 mg. of lead dust per 10 cu. m. of air, except for prolonged exposure, is the

limit of safety under the conditions encountered in this study. This important finding is of great value to the engineer, since it gives him a basis upon which to develop protective devices in the way of exhaust ventilation, respiratory protection, and so on.

Utilizing the same technic employed in the study of the dust problem, the writer conducted a study in 1928 on the health hazards associated with chromium plating.[6] A study of the amount of chromic acid inhaled by these workers, along with physical examinations, showed that ulceration and perforation of the nasal septum was usually associated with an exposure in excess of 1 mg. of chromic acid in 10 cu. m. of air. These results are shown in detail in Table III. It is observed that a fairly good correlation was found to exist between the intensity of exposure to chromic acid mist and the amount of damage to the nasal mucosa, that part of the respiratory tract usually affected by such exposure. As a result of this finding, it was possible to design chromium plating tanks provided with a certain type and degree of exhaust ventilation, which keeps the air at the worker's breathing level less than 1 mg. in 10 cu. m. and perhaps completely free from chromic acid. In a later portion of this discussion it will be shown exactly how this control problem was handled.

Studies of the industrial environment of the type indicated may be said to serve a three-fold purpose: First, they enable one to determine the extent of the hazard. This is accomplished by ascertaining occupational exposures to toxic materials or conditions. Second, if clinical studies are made, the findings may indicate the permissible amounts of toxic materials tolerated with safety. Third, quantitative studies of the workroom environment are valuable in the

TABLE III

OCCUPATIONAL HISTORY AND CLINICAL FINDINGS OF WORKERS EMPLOYED IN PLANTS ENGAGED IN CHROMIUM PLATING

Case No.	Occupation	Months Employed in Chromium Plating Room	Hours per Day Over Tank	Approximate CrO_3 Exposure in mg. per 10 cu. m.	Perforated Septum[1]	Ulcerated Septum[1]	Inflamed Mucosa[1]	Nose Bleed	Chrome Holes	Remarks
1.	Chromium plater	6½	4	15.0	xx	—	xx	x	x	
2.	" "	20	4	28.0	xx	—	x	x	x	
3.	Foreman plater	7	2	25.0	—	xx	xx	x	—	
4.	" "	8½	3	25.0	—	xx	xx	x	—	
5.	Chromium plater	3½	4	56.0	—	xx	xx	x	x	
6.	" "	¾	7	1.2	—	—	xx	x	x	
7.	" "	¼	7	1.2	—	—	xx	x	—	
8.	" "	7	7	1.2	—	—	xx	x	—	
9.	" "	3	7	1.2	—	—	xx	—	x	
10.	" "	36	4	2.0	—	—	xx	—	—	
11.	" "	5	6	1.2	—	—	x	x	x	
12.	" "	¾	6	1.2	—	—	x	—	—	
13.	" "	12	4	28.0	—	—	—	—	—	Used Vaseline in nose
14.	" "	⅔	2	28.0	—	—	—	—	—	
15.	Nickel plater	1½	0	(2)	.....	x	x	x	—	Cyanide burns
16.	Racker	8	0	(2)	x	—	x	x	—	
17.	"	¾	0	(2)	—	—	x	—	—	
18.	"	¾	0	(2)	—	—	x	—	—	
19.	Wiper	1¾	0	(2)	—	—	x	—	—	
20.	Foreman	0	0	0	—	—	x	—	—	Work in other departments of factory
21.	"	0	0	0	—	—	x	—	—	
22.	Clerk	0	0	0	—	—	—	—	—	
23.	Inspector	0	0	0	—	—	x	—	—	

[1] xx, marked; x, slight; —, negative.
[2] Unknown.

control of a hazard. This is performed by testing the efficiency of any devices which may have been introduced for the minimization of the hazard.

In closing this portion of the discussion it is well to point out that the engineering problems in industrial hygiene will increase in number in the very near future. New processes and chemicals are constantly coming into use and many well known toxic substances are finding new applications in industry. Our knowledge of the action of these substances on the body is being augmented by the work of toxicologists and by field studies of the type presented in this paper.

THE CONTROL OF INDUSTRIAL HEALTH HAZARDS

No set rules may be established for mechanical protection to control an industrial poison. Specific conditions will determine the type of protection. In general, there are 5 methods which may be attempted: (1) substitution of a non-toxic material, (2) isolation of the harmful process, (3) wet methods, in the case of some dusty processes, (4) exhaust ventilation, and (5) respiratory protection.

One example of the substitution of a non-toxic material is the possible use of metallic or other type of artificial abrasive for sand, in the sandblasting process, in operations in which it is not essential to use sand (a substance high in quartz content).[7] An excellent illustration of isolation is the mechanical enclosure of a dust-creating process by the modern sandblast barrel used in the cleaning of small objects. It is apparent from Table IV that a tremendous reduction in dust has been effected by the substitution of wet for dry methods in the case of both drilling and rock loading.

In most dusty processes, however, the most effective means of dust elimination are by the use of properly designed exhaust ventilation systems. Since in many instances it is a difficult, costly, and at times unnecessary procedure to remove all the dust in the vicinity of a worker, it would be helpful to determine the minimum amount of a certain dust which the worker can apparently tolerate with impunity. Such information can be made available by the type of studies carried out by the Public Health Service (already mentioned).

TABLE IV

CONTRASTING "WET" AND "DRY" METHODS OF ROCK DRILLING AND LOADING

Processes	*No. of Samples*	*Average Dust Count in Millions of Particles per cu. ft.*	
		"Dry"	*"Wet"*
Drilling	23	568	33
Loading	10	636	32

For example, in the anthracite coal study,[4] it was found that miners exposed to less than 50 million particles of coal dust per cu. ft., with less than 5 per cent quartz in the dust, apparently suffered no disability even after many years of work. In the case of workers in haulageways, who were shown to be inhaling a dust with a higher silica content, the safe limit was placed at 10–15 million particles. In certain of the mines under investigation, control measures were already in force, showing that dust may be eliminated to a certain extent and oftentimes to a safe concentration. Table V shows the results of an engineering study of the control measures practised in some of the mines, and clearly depicts the effective reduction of dust in many of the occupations.

Another example is indicated in the results of a study now in progress in connection with mercurialism among workers in the hatters' fur cutting industry. Table VI shows the exposure to mercury dust and vapor of some of the workers in this industry under controlled and uncontrolled working con-

TABLE V

SUMMARY OF RESULTS CONTRASTING THE DUST EXPOSURE OF MINE WORKERS UNDER CONTROLLED AND UNCONTROLLED WORKING CONDITIONS

Operation	*Dust Concentration in Millions of Particles per cu. ft. of Air*		*Remarks*
	Controlled	*Uncontrolled*	
Firing charge	40	834	Unless at least 15 minutes elapsed after firing a charge, miners found to be exposed to high dust concentrations.
Loading coal or rock	32	636	By wetting the loaded material the dust count is reduced as shown.
Loading coal	4-26	291-1,138 *	Mechanical loading decreases the dust exposure as indicated.
Drilling	33	568	Wet drilling is effective in reducing the dust concentration. Further reduction would necessitate exhaust ventilation.
Hauling coal in mines	1.2	17	Wetting coal and empty cars reduces dust in haulageways.
Preparation of coal	24	380	Wet breakers reduce dust counts as shown.

* The lower result is associated with the hand loading of wet coal while the higher average is based on the hand loading of dry coal.

ditions, and that where some measure of control is practised (segregation or local exhaust ventilation), a material reduction in the exposure has been effected. It is our belief that in the case of blowers such reduction may be effected by mechanical enclosure and local exhaust ventilation, and, with shippers, by a general system of ventilation sufficient to change the air in the storeroom frequently enough to bring the mercury concentration to a lower level. Unfortunately, in the present investigation, it has been impossible to find a plant in which an attempt has been made to reduce the exposure for these two occupations.

TABLE VI

EXPOSURE OF HATTERS' FUR WORKERS TO MERCURY DUST AND VAPOR UNDER CONTROLLED AND UNCONTROLLED CONDITIONS

Occupation	*Total Mercury Exposure in mg. per 10 cu. m.*		*Method of Control*
	Uncontrolled	*Controlled*	
Blowers	4.6	...	None practised
Shippers	7.2	...	" "
Cutters	4 0	1.8	Local exhaust ventilation
Sorters	3.8	1.7	"
Brushers	3.1	1.2	"
Drummers	2.5	0.6	Segregation
Clippers	1.5	0.7	"

While the chromium plating study was being conducted, exhaust ventilation methods for the removal of chromic acid mist were also investigated. Figure II shows the relation between the degree of air velocity at the exhaust ducts and the amount of chromic acid in the air.[6] It is evident from this study that in order to keep the chromic acid content in the air to an amount less than 1 mg. in 10 cu. m. (the minimum amount found to cause no damage to the nasal septum), at least 1,500 feet per minute of air movement at the face of the duct is necessary, especially at the higher electric current densities commonly encountered in electroplating.

Perhaps one additional illustration of the rôle played by the engineer in the control of industrial hazards may

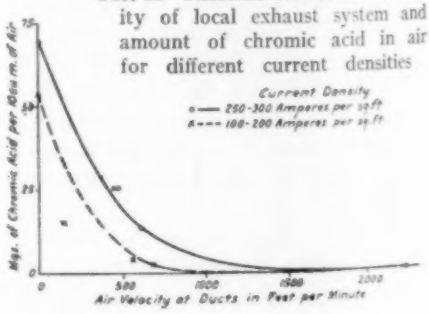


FIG. II—Relation between air velocity of local exhaust system and amount of chromic acid in air for different current densities

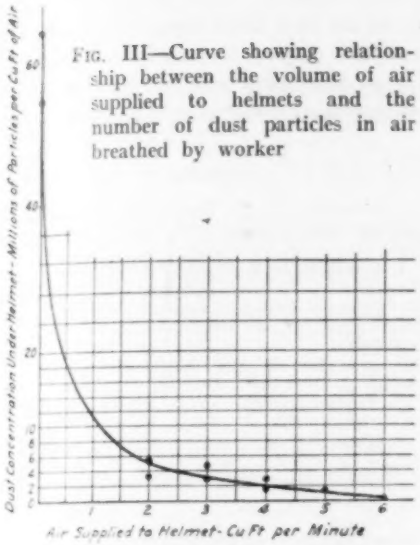


FIG. III—Curve showing relationship between the volume of air supplied to helmets and the number of dust particles in air breathed by worker

be mentioned at this time, to show the varied and important problems confronting him. In the study conducted with health hazards involved in cleaning castings by means of abrasive blasting,[7] it was found that the only practical safeguard was to provide the worker with a mask or helmet of the positive pressure type. In studying the efficiency of such devices it was found that a relationship existed between the amount of air supplied to the helmet and the concentration of dust inside the helmet during blasting. In an attempt to determine the optimum air volume to be supplied to such protective devices, it was necessary to obtain dust samples from inside the helmet while varying the air volume, at the same time maintaining the dust concentration in the sandblast room (outside the helmet) constant. Figure III shows the results of such a study and clearly indicates that the positive supply of 6 cu. ft. of dust-free air per minute will protect a worker under the operating conditions now in practice in sandblast rooms. The ultimate criterion of protection, however, is the result of dust determinations of the air within the helmet, that is, the air actually breathed by the worker and not the volume of air supplied.

From some of the examples cited in this paper it would seem logical to take appropriate measures for their control. That the problem of industrial hygiene is of considerable magnitude is evinced by the fact that we now know that the industrial population experiences high morbidity and mortality rates, partly as a direct result of the working environment, and in addition the number of persons involved is rather large. According to the U. S. Census figures for 1930,[8] in the manufacturing, mechanical and mining industries alone there are some 15 million persons gainfully employed, so that industrial hygienists are at once faced with the task of providing adequate health services for a large number of workers engaged in occupations that are known to entail an exposure, in many instances, to deleterious materials and conditions.

One is also confronted with the fact that, in this country, the majority of establishments are very small, too small in fact to conduct individual programs of industrial hygiene. From a study recently made by the writer in a typical industrial area,[9] and from the Census data of 1930, it is known that approximately 90 per cent of the industrial plants in this country employ less than 100 persons. The consensus of opinion among students of this subject is that the needs of industrial hygiene may best be cared for by local health departments. In fact, many of the state departments of health are now recognizing the necessity of a preventive program in industry and are considering ways and means for establishing such work as an integral part of their organizations.

It is not the purpose of the present paper to delve into the reasons for the necessity of industrial hygiene work in health departments, except to indicate

that once such a program is initiated, the engineer's rôle in it will be an important one, since the task of prevention will largely lie in his hands. It is probably apparent by now from the brief discussion given herein that in order for an engineer to carry on such work he will have to be thoroughly trained in industrial hygiene and be familiar with industrial processes. Such a person should be well grounded from both a theoretical and practical viewpoint in the fields of microscopy, gas chemistry, physiology and mechanics of ventilation, industrial sanitation, illumination, and, most important of all, he should have a broad public health viewpoint. It is apparent that neither a sanitary, mechanical, nor chemical engineer, *per se*, exactly fulfils these requirements. But, there is no reason why an individual with basic engineering training cannot in time be metamorphosed into an industrial hygiene engineer.

In closing, it is well to emphasize one point; namely, that occupational diseases are in a large measure preventable and the degree of prevention exercised by a community will be reflected in the general health status of that community.

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Scorpion Deadlier than Black Widow Spider

MORE lives have been lost in Arizona from the sting of scorpions than from the bite or sting of any other venomous insects or reptiles according to the records of the Arizona State Board of Health. The records disclose 35 deaths from poisonous insects and reptiles in the past 6½ years, of which 25 were caused by the sting of the scorpion.

This record has caused the State Board of Health to declare the scorpion as the greatest death menace in the state among the insects and reptiles, and far more dangerous to human life than is the black widow spider about which so much has been written recently. . . .

Considering the high mortality associated with insect bites in Arizona, it is hoped by the Board that in the near future some biological house will establish research work to determine the feasibility of providing an antiserum for these serious accidents.—Arizona State Board of Health.

Mental Hygiene in the Provincial Health Service*

GRANT FLEMING, M.C., M.D.,
D.P.H., F.A.P.H.A., F.R.C.P. (CANADA), (*Life Member*)
Professor of Public Health and Preventive Medicine, McGill University, Montreal, Canada

IT is obvious that in order to consider mental hygiene in its relationship to the public health organization of a province, it is necessary to set down, in a brief but comprehensive manner, what is meant by mental hygiene and also what is the provincial responsibility for public health services.

To begin with the latter, we may say that, despite a consistent and insistent demand from those interested in public health for greater interest in and participation by the federal government in the field of public health, there is no disposition to free the province of its primary responsibility for the care of the public health.

In times past, the province made the health laws and regulations, and then passed to the local administrative authorities the responsibility for their enforcement. This has, in general, resulted in the creation of reasonably adequate public health departments in the larger centers of population, the residents of which were willing and able to finance such departments. City health departments are, to a very large extent, autonomous units.

With the demand for public health service in the towns and rural areas which had, in fact, little or no service, the provinces came to accept in varying degrees an increasing measure of responsibility for financial assistance, advisory services, and supervision. Today, most of our rural health units are, in practice, decentralized units of a provincial service, with the province supplying practically all the services in such fields as sanitary engineering and tuberculosis control. In other words, the provincial health department no longer confines itself to law enforcement, and supervisory and advisory service, but is actually an operating agency in those fields of public health which, for one reason or another, cannot be fitted to advantage into the local public health organization, except perhaps in the largest centers of population.

This point is elaborated because we are coming to accept mental hygiene as one of the services which should be organized on a provincial basis, along lines very similar to what has been found most effective in tuberculosis, cancer and venereal disease control by certain of the provinces. In no other way does it seem possible to bring to all the people of the province that part of the mental hygiene service which must be provided, or at least directed, by a specially qualified staff. Few local areas could finance the service,

* Read at a Special Session on Mental Hygiene of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 7, 1935.

and even if they could, there is not enough staff available, nor is there the need for such staff, to work on a full-time basis, in local areas outside the cities.

Mental hygiene is an essential part of any health service for the reason that personal health depends upon a combination of both physical and mental fitness in the one individual. If we accept the main purpose of public health as that of increasing human happiness through the prevention of disease and the promotion of efficiency and effectiveness during a longer span of years, by developing to the full the potentialities of the individual, it follows that mental hygiene must be a part of public health.

Mental disease, mental disorders, and the host of great and small defects in personality constitute a greater deterrent to individual happiness and socially acceptable lives than do the corresponding abnormal physical states. True it is, as has been suggested, that the physical and mental are closely related, and that the cause of the symptoms of what may appear to be solely either a psychological or a physiological problem may lie in one or the other, or in a combination of physical and mental. Both physical and mental must be dealt with if either is to be treated adequately, for man is not merely a wonderfully complicated physical machine.

Every worker who comes in contact with human beings requires a knowledge of mental hygiene. To deal successfully with people, you must know people, which is another way of saying that you must understand human behavior. Not only is it necessary to have an understanding of the behavior of other people; it is infinitely more important to be able to recognize the basis for your own feelings and actions under various conditions.

Mental disease and mental disabilities are so common that they cry out for preventive measures. Many of those who would do nothing justify their negative attitude by stating that not enough is known to permit of any worthwhile preventive effort. Surely this is not so, for can we not accept, at least, the importance of environment and the attitudes of parents or teachers with regard to the mental health of the child, and set in action some planned constructive work in the home and the schools? Surely we are satisfied that the treatment of the parent or the teacher is one very important part of the treatment of the problem child. Tuberculosis is being fought successfully despite the lack of specific means for the prevention and cure of the disease, largely through an attack on the physical environment.

It is desirable to consider some of the factors which are holding back the development of mental hygiene. The first that comes to mind is the public attitude toward mental disorders, an attitude indeed that is not limited to the public, for many physicians seem as reluctant as is the public to recognize or accept the reality of mental disease. A diagnosis that is qualified as "mental" is apt to be regarded by the patient's family as a social stigma.

A majority of children cannot achieve to the extent that their parents hope for and, unfortunately, in some cases demand. Parents who accept as a matter of course the differences which exist in the physical equipment of children may be and often are resentful of any suggestion that their child has been endowed with less intelligence than some other child. The result of this attitude on the part of the parents is that the child is frequently driven to tasks which are beyond his capacity. Every child should be assigned tasks which are sufficiently difficult to call upon his powers, but continued and repeated failures create in him a firm conviction

of his inferiority. Achievement and recognition, personal satisfaction and social approbation are necessary experiences for the child and the adult, to encourage each to persist in the learning process.

Prejudice and ignorance must be fought by enlightenment through education. Mental disease was not accepted as arising out of natural causes until a very long time after the supernatural was forgotten as a cause of physical disorders. The public and the professional attitude toward mental disease is travelling the same, road years later, that had been trod with regard to tuberculosis, venereal disease, and cancer.

There was a time, not so many years ago, when we spoke of a child welfare program, of a campaign against tuberculosis, or some other specific item of public health service, as if such movement were and could be separate and distinct. Later we learned that fundamentally all these supposedly different items were in reality much the same, with particular emphasis placed here and there. This must be true, because behind every health program, no matter what name is attached to it, there must be the same basic principles of general health.

There is no reason why this mistake should be duplicated as regards mental hygiene. Any suggestion that the solution of the mental health problem is to be found in the creation of a separate division or department, with the establishment of a new group of clinics, is doomed to failure. Mental hygiene will be effective in proportion to the extent to which it is integrated into all the public health services which touch the lives of the people.

Because of its relationship to other provincial departments, notably education, justice, and public welfare, the question arises as to whether mental hygiene should be organized as a part of the public health department, or as a separate department of government, closely linked with others requiring mental hygiene in their services, notably departments of health and welfare. In any particular situation, we recognize that organization is based on the personnel available.

Mental ill health may bring the individual to a mental hospital as a patient, to the courts as a delinquent, or to a welfare agency as a social problem. This is because of a faulty system of diagnosis and our existing organization, for we know that such cases should be considered in terms of the personality problems presented and should receive the treatment indicated. Essentially, mental health and mental disorders constitute a medical problem and, therefore, mental hygiene should be organized as a part of the public health service. We believe this to be so in our teaching situation, and so we include mental hygiene instruction in the curriculum of our university department of public health and preventive medicine for the various professional schools. Personal experience dictates the desirability of such an arrangement for many reasons, not the least important of which is the effect of the arrangement upon the attitudes of the personnel of the department in all the teaching.

This should in no way minimize the effort to bring mental hygiene into the educational system, the courts, and the public welfare services. It may be said that one of the major responsibilities of the mental hygiene director in the public health service will be to extend his field in order that he may give direction and help to leaders in other departments and professional fields.

In stating the program for a mental hygiene division in the provincial health service, it is possible to enumerate a vast number of items and to present arguments which would justify their

inclusion. In the future, they will likely all be included, but at our present stage of development, it seems wise to adopt a more limited and circumscribed program, because it is better to be specific to begin with, to take one step at a time. Furthermore, as the amount of money will always be limited, it is important to expend what sum is available upon those activities which will give the greatest return through doing the greatest good for the greatest number.

The modern public health movement came into being during the latter part of the 18th century as an expression of humanitarianism. It was not long before the principle came to be accepted that care of the public health was not only Christian but was good business, and soon it was proclaimed that public health pays.

When we say that the first item on our mental hygiene program must be the provision of adequate care for those who, through no fault of their own, are in need of institutional treatment, we might be tempted to add, in a somewhat apologetic tone, that "humanity demands this," whereas the truth is that it is always "good business" for any community to take care of its sick, whether the disorder be physical or mental.

Mental hygiene has a further difficult task. There are individuals who are born with those varying degrees of low intelligence which demand special educational facilities if each individual is to be trained so as to be, within the limitations of each, a self-supporting, socially acceptable citizen.

The special institutions for treatment and training are a part of the mental hygiene service just as the sanatoria and other institutions are part and parcel of the tuberculosis control program. Institutions are mentioned first because the provinces had accepted responsibility for institutional care and provided institutions long before mental hygiene was even thought of. Even though the institutions may not be adequate, it is around them that we may hope to develop the provincial mental hygiene program.

Next on the program comes public education. The reason for this is obvious. First of all, the public must be informed as to the gravity and extent of the problem. In other words, public interest must be aroused through an understanding of the situation as it exists and so be prepared to support, financially and otherwise, the mental hygiene program.

The real object of arousing interest is to seize the opportunity of presenting a plan for meeting the need. It is fair to say that mental hygiene has suffered seriously because certain irresponsible persons have led a section of the public to believe that mental hygiene is some sort of magic system which can furnish a formula for solving all the personal and social problems of mankind.

It is essential that public instruction be fairly conservative, and that it express and interpret to the public the generally accepted opinion of those who are qualified to lead in this particular branch of science. At the same time, attention will be given to combating the old superstitions, which still prevail, regarding mental afflictions. This alone will require much time and effort because old ideas die hard.

Past experience would seem to justify a feeling that while there is a very definite place for health education directed toward one specific objective, a considerable part of the continuous instruction of the public in mental hygiene, by means of the printed word particularly, should be as a part of the whole health teaching. Unless it is so integrated, the mass of the public will fail to accept that mental hygiene instruction is part of the whole, and

so will be perpetuated the false idea that mind and body are separate and unrelated.

The instruction of the public in mental hygiene should come under the division of health education of the provincial department of public health. The machinery which already exists can thus be used. The provincial baby book can and should include consideration of the development of the whole child, mentally as well as physically. Health teaching which has to do with personal health as distinct from the control of the physical environment cannot deal adequately with the particular subject under consideration unless it include a study of the mental life of the individual.

Once public interest has been aroused, there will come a demand for information. As has been suggested, the division of health education in the health department can be used to meet much of this demand. In the health department is found also another medium for the education of the public. The public health nurse has proved to be the most powerful force in the continuous dissemination of health information to the public.

In speaking so highly of the public health nurse, it is not with the idea of disparaging the importance of other public health workers as health teachers. Because of the number of public health nurses, their close association with the families through home visiting, and their already established place in the field, they are, in effect, the health teachers of the community.

If the public health nurse, or anyone else, is to teach mental hygiene, she herself must have a fairly thorough knowledge of the subject. Staff education is one of the most important items in the provincial mental hygiene program. Staff education should begin with members of the provincial department itself, and extend gradually to staffs of health, social, and educational agencies throughout the province. This is essential to bring existing staffs up to date in their equipment for teaching. Continuous staff instruction in all fields is recognized as necessary, but we cannot hope that new appointees will come prepared in mental hygiene until there is adequate instruction and experience during training in medical schools, schools of nursing, schools of public health and social work, and also in normal schools.

Just as intelligent students have made use of knowledge regarding personal hygiene for their own benefit as well as that of their clients, so the same intelligent students will find in mental hygiene a great personal asset to assist in solving the problems of life which all must face. It would be fair to say that all students should have mental hygiene training.

If we are to have sound instruction, then we must have competent teachers, and here is one of the most difficult needs to be met, because of the lack which exists and the time it takes to develop teachers.

In the provincial organization are found the staffs of the various provincial mental hospitals. It is no reflection upon the members of these staffs to say that, because of a tremendous pressure of work, they are apt to develop a somewhat narrow institutional point of view. It seems desirable, both for the staff and the public, that there be organized mobile mental hygiene clinics, staffed from the mental hospitals, to provide service. This would serve also to broaden the field of interest and experience of the institutional staffs by bringing them into contact with the non-institutional type of case; it would provide for them an opportunity to learn, through clinical experience, the significance of behavior symptoms in the child, and to come in intimate association with the workers

from community organizations, many of whose problems are essentially concerned with the mental health of their clients.

While recognizing the importance of the mental hygiene clinic, which should not be disguised under another name for fear of using the word "mental," and looking upon the clinic as an essential unit in the mental hygiene program, it is not to be understood that all those who require mental hygiene service are to pass through a special clinic. Indeed, the only hope of bringing mental hygiene to the masses is through the medium of the general practitioner of medicine, the pediatrist, the well baby clinic, and the public health and social worker. The mental hygiene clinic should serve as a center for the diagnosis of difficult cases, referred by physicians, health and welfare agencies, schools, and courts, after which treatment will be prescribed to be carried out, in most cases by the referring individual or agency. Cases presenting unusual problems may be carried by the clinic staff.

The clinics should be centers from which would radiate, not only community leadership in mental hygiene, but also sound teaching and guidance. The clinic may also be used as an outpatient department of the hospital to supervise discharged and boarded-out cases.

So far, it will be noted that the program suggested for the provincial health department is the acceptance and inclusion of well tried and proved pieces of work in the mental health field. It is very questionable if official agencies should go any farther. It would seem better to leave to the voluntary health agency the responsibility for pioneer work in mental hygiene, and for the official department to absorb new items just as soon as the soundness and practicability of these are established, but not before.

Those who believe that parent education as regards its content and technic is sufficiently established to warrant its acceptance as an integral part of mental hygiene service will expect to have it included. Those of us who would like to see more consideration given to the subject before expressing approval of content and technic would prefer to leave parent education to the voluntary agency for the time being.

It is difficult to visualize public health progress without the leadership, stimulation, and criticism of the voluntary agency. The nonofficial should be complementary to the official. This is particularly true in a comparatively new field which seems so vast in its potentialities that it creates a feeling of helplessness in the minds of some.

The size of the problem should not daunt us for, in proportion to the size, results will be attained. What is justified is a spirit of caution which brings us to pause and to endeavor to ascertain what is to be done first of all, and what are the second and third steps.

We cannot wait forever to make sure that there will not be mistakes, but we can allow the voluntary agency to conduct the studies and demonstrations from which the official department may hope to learn the most effective means to attain its objectives.

It is for this reason that the official authority should encourage and support the activities of the voluntary mental hygiene organization in carrying out those functions which can be better dealt with by the voluntary agency.

To sum up, what I have said is this—Because we deal with individuals, mental hygiene cannot be divorced from physical hygiene; mental hygiene appears to be one of the public health activities which, at least outside of the larger centers of population, will have to be conducted on a provincial basis; the logical location of mental

hygiene in university teaching or in public health service is as a part of public health, given a full appreciation of the necessity for intimate association with other professional services; the program for the present should be limited to those items which experience has shown to be of value and which are administratively possible, namely, institutions for the treatment of mental disorders and for the training of mental defectives; there must be a program of public education and a definite provision for staff education, with promotion of adequate instruction in professional schools; there must be organized mental hygiene clinics, staffed from the mental hospitals, to provide service and also to offer facilities for the clinical experience required to prepare the teachers needed for carrying out the educational program; for the time being, the program may be limited, and the voluntary mental hygiene agency encouraged to pioneer in this field, with the official department gradually absorbing tried and proved pieces of work.

American Red Cross Annual Roll Call

Armistice Day to Thanksgiving

Physical Preparation for School Admission*

RICHARD A. BOLT, M.D., DR.P.H., F.A.P.H.A.
Director of Cleveland Child Health Association, Cleveland, Ohio

YEAR after year we continue routine physical examinations of children on school entrance. We find practically the same defects in about the same percentage of cases. We record the findings more or less accurately and completely. For various reasons we find it difficult to secure prompt and effective correction. Hampered by his defects it takes the child a year or two to adjust himself to the new order of things. This is decidedly harmful to the child as well as expensive to the school.

We know that children with depleted nutrition, with defects of sight and hearing, with dead or dying teeth, with enlarged and infected tonsils, cannot take full advantage of the educational procedures which are offered. School physicians and nurses are fully aware of this, and teachers soon recognize the relationship between poor physical condition and the ability of the child to measure up to standard in the daily program.

School medical inspection was among the first public health measures to be applied to children. As early as 1842 France issued a decree for school inspection by physicians. In the United States the first law relative to medical inspection was passed in Connecticut in 1899.

Since then we have accumulated a great deal of experience in developing routine medical inspection and in providing a follow-up by public health nurses; yet it must be confessed that in many places less real progress has been made in the early correction of defects and the inculcation of health habits than in any other phase of child health. Why should this continue?

The study of physical defects among school children in New York City, conducted by the Research Division of the American Child Health Association, showed clearly that a considerable proportion of the defects discovered during the course of routine medical examinations were not corrected. A number of pertinent questions were raised:

1. To what extent have school health staffs been remiss in following up the case and in impressing parents with its importance?
2. Is the lack of response on the part of parents due to apathy or neglect?
3. To what extent is lack of corrective facilities, within the financial means of parents, to blame?
4. Is it possible that the character of the examination in the first place has been responsible for unduly encumbering the records with matters which are not as serious as they appear? Is this one of the reasons why parents fail to respond? [1]

The failure to obtain results was due largely to the method of recording the defects, to a conflict of opinion which prevented continued follow-up, and to the fact that the parents did not coöperate with the school authorities in carrying out the recommendations.

* Read at a Joint Session of the American Association of School Physicians and the Child Hygiene Section of the American Public Health Association, at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 7, 1935.

To this must be added the inability of many parents to pay full medical fees.

In a survey conducted by the National Organization for Public Health Nursing[2] an appraisal was made of the quality of work performed by public health nurses of 57 agencies in 28 communities throughout the United States. In order of quality this survey rated the nursing services as follows:

1. Prenatal care
2. Care of the sick
3. Postpartum and neonatal care
4. Health supervision of infants
5. Disease prevention including—
   a. Tuberculosis control
   b. Communicable disease control
   c. Syphilis and gonorrhea control
6. Health supervision of preschool children
7. Health supervision of school children

It is significant that school health supervision should fall at the very bottom of the list. Nursing follow-up for school children undoubtedly has a good deal to do with the response of parents in having defects corrected.

Neither of these surveys, it seems to me, touches the mainspring of the difficulty. When the child enters school over 50 per cent of the opportunity to prevent certain communicable diseases is over. If suitable immunization measures were carried out in the preschool period there would be fewer cases of infectious disease arising in the schools. Many of the defects from which the child suffers in school have been acquired before school entrance and have remained unnoticed and uncorrected for such a long time that the parents have overlooked their importance. It is only in the school environment itself that the defects become noticeable. There they impede the progress of the child.

It is well known that the babies and infants up to 2 years of age, on the whole, have received exceptionally good care. This is the result of effective public health and preventive pediatric measures which have been continued in spite of the depression. The great majority of children arriving at the age of 2 years have been under medical and nursing supervision and are in good condition. It is during the period from 2 to 6 that these children get out from under organized social control, and that the parents neglect to carry out measures necessary to prevent defects, or to have them corrected when they occur.

If preschool children were examined thoroughly by competent medical personnel and proper follow-up were instituted, there is no question that a great deal of the load of medical inspection during the first years of school life could be lifted. The children would gain immeasurably in having the defects corrected before school entrance; the school would be in a much better position to adjust the children earlier to its curriculum.

We have definite knowledge of the nature and extent of defects from which preschool children suffer. In many instances we are able to prevent or correct them. We have adequate professional skill to make the corrections. I am convinced the difficulty is not so much the lack of knowledge and proper technics to prevent many of the defects of childhood, or to correct them when they have occurred, as the lack of a properly coördinated system of child welfare to carry the excellent results which have been obtained in infancy over into the preschool and school years. If this could be accomplished we not only would help the children to better health and earlier school adjustment but an enormous amount of money would be saved which now is expended in attempts to get corrections carried out through the schools. The schools then would be in a position to devote themselves more to the health education aspects of health supervision.

The gap may be filled either by extending the work from the infant

welfare centers to cover the preschool child or by pushing back the school health work to join with the infant welfare. A continuous health record of the child from infancy through school life would be of great value.

The problem, therefore, resolves itself not into technical—medical, dental, and nursing—procedures; but into a program of community organization along socio-medical lines. Up to the present we have attempted to reach the preschool child through family physicians, general health work, specialized services in day nurseries and nursery schools, and sporadic efforts of preschool drives. Undoubtedly this has called to the attention of parents the condition of preschool children and has stimulated a certain number to have corrections carried out before school entrance; but it has been carried out in such a haphazard manner that it has reached only a small proportion of the preschool population. If we are to secure results for older children comparable to those in the infant welfare field, we must develop our program for the preschool group.

It is true theoretically that each family should have its own family physician and that the physician should follow the child right on through school. When it comes to a practical application of corrections, however, we find that not more than 10 or 15 per cent of the families can afford private physicians' services for preventive and corrective work.

Abundant experience has demonstrated that the most practical method of reaching large numbers of children at minimum cost is through well organized health centers. Another possibility, as has been suggested, is an extension downward of the school medical service. The kindergarten is still a feature of a number of the public school systems in America; but in many places it has remained bound to methods which have become antiquated. A number of kindergartens throughout the country, however, are transforming themselves gradually into what might well be called nursery schools.

England has found it possible through nursery schools to secure the correction of a great many of the defects of preschool children. If the kindergarten system of America extends its influence gradually downward, there is great opportunity for the medical service to concentrate on this period and thus secure the correction of defects at a much earlier time.

The excellent results secured by the health care of children in the best conditioned day nurseries and nursery schools give promise that a wider extension of preschool preparation for school will bring about desired results from the standpoint of parents, children, and schools.

REFERENCES

1. *Physical Defects—The Pathway to Correction*, American Child Health Association, 1934, p. 2.
2. *Survey of Public Health Nursing in the United States*, National Organization for Public Health Nursing, 1934.

Milk

YOU don't have to be a calf to enjoy milk, for there is no substitute for this indispensable food in the human diet. Use it, therefore, in liberal amounts in your daily diets, whether you want to slenderize or become more ponderous, or merely want a protective food that will help to maintain the vigor and stamina of a comely and well-formed body.—James A. Tobey, Dr.P.H., Radio Talk, Milwaukee Annual Meeting.

Part the School Nurse Plays in the School Health Education Program*

ELMA ROOD, R.N.

Associate in Charge of Health Education, Tennessee Valley Authority, Knoxville, Tenn.

A WELL KNOWN leader in public health work once gave this advice to his associates: "Whenever you are asked to outline a tentative program, set up your plan as ideally as possible, and then if you have to, cut it and modify it according to the conditions in which you must work," which is just another way of saying "Hitch your wagon to a star." If we put this advice into practice in outlining a program for the school nurse, we shall consider in this paper how the *best* school nurse in the most favorable school situation may be able to contribute most to the aims and purposes of general education and to the school health education program in particular.

Of course the term "best" is one which is subject to a great variety of interpretations depending largely upon the viewpoint of the person doing the judging. No two people in the world may agree on the requirements for "best." Perhaps no two people would agree on what is "best" as applied to a school nurse. Most people would be influenced indirectly in giving an opinion by the many and well known controversial questions bearing on this subject. This topic does not call for a discussion of these unsettled problems; however, no opinion of the way in which the school nurse may do her best work can possibly be expressed without touching upon some important and controversial issues.

There are two major factors out of the many that condition the work of the school, which influence the contribution that the school nurse can make to the health education program. The first of these factors is the nurse herself, her personality, preparation, and experience. The second factor is the school, its leadership, philosophy, scope, and the vision of the teaching staff.

First let us consider the nurse and some personality traits that will be likely to contribute greatly to her services. Excellent health—physical, mental, and social—and an abundance of energy and good nature help her to be a constant teaching example. She likes people and is able to work harmoniously with them. She especially likes and enjoys children, and her attitude on this point is apt to influence the whole school health program. Mental alertness, initiative, courage, stick-to-it-iveness, and a moderate amount of aggressiveness are all qualities which help her to find and develop latent possibilities in the school field. Needless to say, enthusiasm for and belief in her work

* Read at a Joint Session of the American Association of School Physicians and the Public Health Education Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 10, 1935.

color her personality and influence all of her contacts.

The preparation of this school nurse for her work is likewise of great importance. She has a good background in general education, especially in the biological sciences. She has had excellent basic health training in which she has gained an understanding of the growth and development of normal children and of methods of conserving and protecting this development. She has had a course in community health in which the major emphasis was placed upon the educational aspects of the public health field rather than upon the clinical. She has a thorough knowledge of and ability to apply principles that govern the teaching and learning processes, and these principles are in accord with the most enlightened ideas on education. She understands and appreciates the teacher's work and influence with children and with parents, and in addition she has ability to inform herself on the content of the curriculum, and the extra-curricula activities which are found generally now in the public schools. This gives her a valuable background for advising on ways to integrate health into the child's day. Contacts with normal children have been obtained in a nursery school, summer play school, or camp, or possibly in teaching experience, and this is an invaluable background for community work. These contacts have modified the approach and attitude so often developed through caring for sick children. She has also had experience in the generalized public health field and this has given her a very good idea of the whole community program of which school health is a special and important phase.

In addition to this preparation the nurse is constantly studying to keep abreast of a rapidly developing field. Whenever she has realized a weak spot in her preparation, she has reinforced this point with a summer course or a special line of experience.

The preparation and background of this nurse is thus equal to or greater than that of the teachers with whom she works, so that she is fully acceptable to them in the capacity of consultant and adviser. This relationship is of tremendous importance and can hardly be overestimated for its effects upon the program.

Now let us see what factors there are within the school itself that favor the maximum contribution of the school nurse. We must recall again that "best" is an unknown quality when applied to the school also, but that research in education and its outcomes in terms of growth and development of children, seem to indicate certain trends in general education that are increasingly acceptable to experienced leaders in this field, and that should be applicable to health education since this represents a very closely interrelated phase of all education.

The first factor in the school that exerts an influence upon the work of the school nurse is found in the school administrator. As the educational leader he determines quite largely the philosophy that shall guide the learning process, and because he appreciates that his staff should have a clear-cut understanding of this educational philosophy, early in the school year some basic principles are evolved and interpreted such as, for instance:

Each child to be encouraged to do his best and to have such experiences as will help him to do this; each child to have opportunities to exercise originality, initiative, and responsibility in deciding questions or problems that arise in his own life; each child as a member of a social group to have a part in initiating, planning, executing, and judging in coöperation with others; each child to meet the problems of life daily in the classroom,

and so to be ready for the broader and more responsible life of the community in which he must take an increasingly active part.

Such a philosophy welcomes health as a quality which is associated with many experiences of living. It becomes a part of this philosophy that each child shall be intelligent, voluntarily coöperative and, as far as possible, self-directing on every health procedure. To accomplish these aims requires the highest type of education.

The scope of the school program influences directly the breadth of the work of the school nurse. This school is extending its influence in two directions, downward in the interest of the young children who represent the future school population, and upward and outward to the adult members of the community. Therefore it no longer represents an institution only for children, but leads out into the growth and development of the whole community. This type of community program is an open door to the kind of health education that will be a challenge to the school nurse.

We have named last among the factors that influence the work of the nurse, the vision of the teaching staff. It is a question whether this factor does not deserve the leading place from the standpoint of its potentialities. The teacher with vision sees each child as a person—whom she must know very well if she is to contribute her maximum to his development. She constantly tries to broaden the child's experiences and so pulls in those activities that will help him most to grow. She finds and welcomes situations that require personal and group decisions since these give the child practice in intelligent thinking and judging. She knows that environments sometimes change completely under a child's fingers, and that the attitudes of a whole community may be touched by a child's interests and feelings. She recognizes that health is something that functions in the classroom every hour of the day, that it follows a child into his home and out into the community, and that she must be alert to find the learning opportunities in this broad experience and to make them alive and meaningful.

With such vision what better ally can the school nurse have than the classroom teacher!

Now that we have our setting for this school nurse let us see how she plays her part in a community health education program, in which the common barriers of age and subject are removed so that health can effectually penetrate into public consciousness as one determiner of effective citizenship.

Recognizing that she is engaged in the most potentially far-reaching and constructive phase of the public health program of the community, she has established early and close contacts with the organized health department, not only as a means of instituting measures for the protection of the school, but to gather suggestions on basic problems which may be incorporated into the learning of children.

In her official reports to the health department she is constantly interpreting health as an aspect or modifier of social and economic problems, rather than as a subject, and as a quality so tied to many interests in the community that she does not expect nor desire that every educational effort bearing on health should be so labeled. In discussing results to be sought, she illustrates concretely that by far the most valuable outcomes in the form of feelings, desires, and attitudes, are often of an intangible nature, not subject to rating by the ordinary type of appraisal form, or capable of being totalled on an adding machine.

She keeps the health department informed regularly on health conditions and progress, and obtains advice on

necessary technical steps to be taken. She counsels on ways in which services to be rendered by doctors and nurses may be of the maximum educational value. She serves as the go-between for the school and the health department in making use of community resources in the interest of children, and in carrying out special directions in times of emergency. She works closely with the official health department on plans for reaching the preschool group, taking an active part in such adult courses as are built around the problems of the young child. She also plans with the teachers to make the preschool work as far as possible a part of the social training of school children.

She assists in the preparation of educational material for use in the Parent-Teacher or other organizations on such subjects as bear on child health and protection, and takes part in incorporating this knowledege into the understanding of the community.

She is constantly interpreting to adult groups the needs of children and what the school is doing throughout the entire day to meet these needs, and through these contacts she finds and develops lay participation in all health services rendered to the school.

Her contact with the teachers is close, friendly, and cordial, and a spirit of helpfulness pervades all services rendered. She is personally interested in the health of each member of the teaching staff and sometimes talks over with them their everyday health problems. She is constantly alert to see dangers or hazards, whether physical, mental, or social, as these may affect any one in the school, and quick to bring these to the understanding attention of the school administrator or teacher. She works closely with all departments of the school in bringing about the most wholesome environment, emphasizing the possible educational value of all problems to the pupils.

In all contacts with children she aims to be an example of health, and she plans ahead to make all these contacts as meaningful as possible.

In her relationship with parents she serves as an adviser, and constantly interprets the needs of and services rendered to children at different stages and phases of development. Believing that parents usually receive and act more readily upon advice which they seek, she fosters and develops a parents' consultation service at the school where constructive advice on child problems may readily be obtained.

At the beginning of each year the attention of the school is called to the value of an early inventory of health needs as a basis for a constructive program for the year. The nurse assists the school in arranging for health examinations of children, and plans definitely to have this procedure understood by teachers, pupils, and parents.

On the basis of the health inventory the nurse interprets the constructive work that needs to be done, especially calling attention to the importance of having the understanding and coöperation of the child whenever possible and advisable.

When follow-up work is begun the nurse supplements and reinforces the teacher's knowledge of the problem, by giving her pertinent information on home and community conditions affecting that specific problem. She also keeps the school informed on current scientific discoveries significant to an understanding of child problems, and on source materials of value to the teachers or for use by the pupils in special studies. She frequently passes over to the teacher the knowledge she has gained from her first-hand field experience with local conditions.

The school nurse is interested in every phase of community work, and is alert to discover and commend associations which are built with any phase of

health. On such subjects as require some technical training such as home care of the sick, or first aid, she takes an active part in instruction, in the school to assist the regular teacher to carry it on more effectually after the demonstration is over, and in the community, to develop ability to conserve and build health in the home.

Activities mentioned thus far are concerned primarily with well children. In every school there are those who need special provisions either for physical reasons or because of some mental or social difficulty. To solve the problems of such children often requires the coöperation of many agencies and the nurse is ready to make her contribution to any constructive program outlined for an exceptional child. She follows up such recommendations as come within her field, and helps to secure understanding coöperation in the interest of the child's welfare.

The nurse contributes all data possible on the health history and status of each pupil, as a part of the cumulative record which shows all phases of his growth and development and which accompanies the child throughout his school life. As these histories grow, she prepares material in the form of graphs or charts to help the school better to see its health needs, its progress, and the problems on which special emphasis may be indicated.

As the school grows in its awareness that health is associated with all phases of its program, the nurse becomes increasingly an adviser on the health aspects of such activities as the school lunch, swimming pool, picnics, field trips, excursions, hikes, and contributes to the educational phases of these whenever possible.

From the illustrations which have been given it is seen that this school nurse is primarily an educator with a special background in the field of health, one who serves not only as a guide to teachers, but as a teacher of parents; one who successfully coördinates school health with the public health work of the community, and merges her contribution into the coöperative program aiming to raise the level of child health and intelligence; one who does her part in making the school become the focus for the health educational work of the entire community.

The outlining of this program may stimulate questions as to its practicability, soundness, and economy—such questions, as, "Where could a school nurse be obtained to carry on such a program?" "Will school boards afford to employ such a person?" "Is it possible to carry such a program in a generalized service?" "Is it as worth while to provide a special health service for children as it is to provide a special service for workers in industry?" "Would the school physician, if there is one, welcome such a person in the school?" "Would it pay the community in hard dollars and cents to have this service as a part of the educational system?"

Some nurses may feel that this program is entirely too far away from present practices and standards in school nursing. Others may wish to start at once to prepare for just such a service, confident that opportunities open to the person who is well prepared. It is likely that this ideal is within reach of many nurses at present in the field who have a clear vision of its possibilities and determination to secure the necessary preparation, and experience.

Judging by the way in which other civic enterprises have grown because a vision has been translated into action, it would be reasonable to predict that such school nurses will be developed, as individuals catch the vision of the potentialities in this field, and realize the truth and tremendous significance

of the statement made at the White House Conference to the effect that "civilization moves forward on the feet of little children." Training facilities always materialize in proportion to the demands of the field. So far the demands for this type of service have come mainly from school administrators, many of whom realize the needs but have not succeeded in establishing such a program for lack of adequately trained personnel. There needs to be built a greater appreciation on the part of public health nurses that the education of the school child as a citizen in the making, is building not only for present, but for future generations, and that by this means only will we solve many of the public health problems which now absorb so much of the time and energy of health workers with so little in permanent returns, that we must change our program from one which is largely corrective and palliative to one which is positive and constructive.

The school nurse who prepares herself to take part in such a program will be a contributor to the most advanced steps being taken in the public health field.

Swope Appeals for Health Fund

WITH more than one-third of the public health work in the United States supported by contributions to community chests and other private services, only $1 per capita from both public and private funds is being spent for public health work in the nation, it was pointed out by Gerard Swope, chairman of the 1935 Mobilization for Human Needs.

Mr. Swope based his figures on a report submitted by the National Health Council, whose agencies are coöperating with the Mobilization. He pointed out that sound public health work required an expenditure of from $2.50 to $3 per capita annually.

Mr. Swope, who is president of the General Electric Company, made it clear that about one-third to one-half of the budget appropriated from tax money for public health went to support nursing services and that this was greatly increased by money provided by private health agencies for nursing service.

Exclusive of private-duty nurses, there are in the United States about 20,000 public health and bedside nurses, of whom 40 per cent are paid for by private agencies, Mr. Swope declared, asserting that there were only one-sixth as many public health nurses in the United States as there should be. . . .

Much has already been done to reduce preventable diseases and epidemics and to prolong life, but much remains to be done in the fight to banish disease. Money can do it; money pays for nursing service, hospital and clinic treatment, public sanitation and food protection, and other measures for making better community health.

In the realm of public health there is, this year, great need for the private health agencies supported by money from community chests and other private sources.

To acquaint the public with the true health situation in this country, a campaign has been launched this fall under the sponsorship of the National Health Council, to hold in more than 400 cities of the United States town meetings to discuss matters of community health. In each city the meeting will be preceded by a community-wide inquiry into community health conditions.

—*New York Times*, Oct. 15, 1935.

Frequency of Immunizing Procedures of Various Kinds in 9,000 Families Observed for 12 Months, 1928-1931

SELWYN D. COLLINS, PH.D., F.A.P.H.A.

Office of Statistical Investigations, U. S. Public Health Service, Washington, D.C.

IN connection with a study of illness and medical care in a group of nearly 40,000 persons, made by the U. S. Public Health Service in coöperation with the Committee on the Costs of Medical Care, information about the various immunizing procedures was recorded. The data were collected through periodic calls to the homes by visiting nurses for a sufficient time to obtain a 12 month record of illness and medical care. All immunizing procedures reported as occurring during the year were recorded and for four diseases information was obtained about the history of artificial immunization prior to the study.

The 8,758 white families surveyed lived in 130 localities in 18 states and represented all geographic sections of the United States. Every size of community was included, from metropolitan districts to small industrial and agricultural towns and rural unincorporated areas. The observed group was fairly similar to the general population with respect to age and sex composition, percentage native born, and percentage married. With respect to income, the distribution was reasonably similar to the estimated distribution of the general population of the United States at the time of the survey. More details about the canvassed families are given in preceding reports.[1-7]

Figure I shows the proportion of persons of specific ages who had been artificially immunized against smallpox, diphtheria, scarlet fever, and typhoid. These curves are cumulative in nature because they consider immunization * at any time in the individual's life. If the frequency of immunizations has

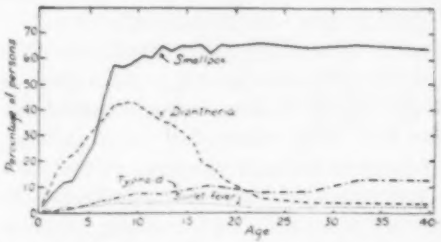

FIGURE I—Proportions of persons of specific ages who have ever been artificially immunized against certain diseases—8,758 white families, including 39,185 individuals in 130 localities in 18 states canvassed between 1928 and 1931.

In the absence of changes in past years in the frequency of the immunizing procedures, the curves would rise continuously; the use of diphtheria and scarlet fever immunization among children has increased in recent years and more children than adults give histories of such procedures.

* "Immunization" is used in this paper to mean the usual procedure for producing artificial immunity to a particular disease, such as toxin-antitoxin for diphtheria. All cases receiving such service are designated as "immunizations" whether or not the process actually produced immunity in the individual, except that histories of smallpox vaccinations are exclusive of unsuccessful vaccinations.

not changed in past years, the curves may be thought of as roughly corresponding to an accumulation of persons who have received artificial immunizations in a population kept under observation from birth to middle life. However, in the case of diphtheria, at least, the frequency of immunizations has changed; persons above 25 years at the time of the survey had passed the age of greatest susceptibility to the disease before the use of diphtheria toxin-antitoxin became widespread, and few persons of these ages have ever been artificially immunized. The same is true of scarlet fever, but there are so few immunizations at any age that the curve does not show the change so well.

In infancy and the preschool ages a higher percentage of the children had been artificially immunized against diphtheria than against smallpox. This finding is in agreement with that of the White House Conference report on preventive procedures in preschool children.[8] In this country, however, a great many children are vaccinated for the first time when they enter school, and above 6 years the proportions vaccinated against smallpox greatly exceed those artificially immunized against diphtheria.

Smallpox vaccinations reach a maximum level of about 66 per cent by 16 years of age, after which there are relatively few primary vaccinations. Diphtheria immunizations reach a maximum of 43 per cent at 9 years; the reasons for the decline thereafter have already been discussed. Typhoid immunizations reach 10 per cent by about 17 years of age, with a second maximum of 12 per cent at 30 to 45 years which probably reflects the compulsory immunization of males in the military services during the World War. Scarlet fever immunizations reach a maximum of 4 per cent at about 13 years of age.

The curves in Figure I cannot be taken as representing active immunity at the time of the survey, particularly in the adult ages, because: (1) Many of the immunizations were done in childhood and never repeated; of the persons 20–24 years of age, only 19 per cent had been vaccinated against smallpox within 7 years, and at 35–44 years only 11 per cent had been vaccinated within that time. (2) Schick and Dick tests indicate that a large percentage of adults have developed immunity to diphtheria and scarlet fever without any artificial procedure or recognized attack of the disease. (3) The curves represent histories of artificial immunizing procedures and do not include histories of cases of the disease. In the older ages, histories of typhoid fever cases are about as frequent as histories of artificial immunization; among persons 35–44 years, 8 per cent gave a history of a case, and 12 per cent gave a history of an artificial immunizing procedure without a case; above 45 years, about 10 per cent gave a history of a case. In smallpox, only about 5 per cent of adults gave a history of the disease as compared with 66 per cent who had been vaccinated but had not had the disease. In diphtheria and scarlet fever the histories of recognized attacks are small as compared with the number who show im-

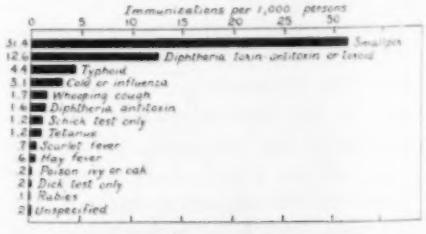

FIGURE II—Annual artificial immunizations against various diseases per 1,000 population under observation—8,758 white families canvassed periodically for 12 consecutive months, 1928–1931. (Rates based on 38,544 full-time person-years of life.)

munity by the Schick and Dick tests, but are not small as compared with artificial immunizations. At 13 to 15 years of age 13 per cent of the children gave a history of scarlet fever attacks as compared with 4 per cent with a history of an artificial immunizing procedure. At 9 years when the history of diphtheria toxin-antitoxin or toxoid was at the maximum of 43 per cent, 4 per cent of the children gave a history of recognized attacks of diphtheria. Among adults, about 7 per cent gave a history of diphtheria.

Figure I represents average percentages for the whole group of surveyed persons. In smallpox there are large differences in vaccinal status between the cities and rural areas. In cities of over 100,000 population, about 86 per cent of adults have been vaccinated as compared with 44 per cent of adults living in the open country. The proportions for towns under 5,000 and for cities of 5,000 to 100,000 population fall logically between these limits. Variations in different geographic sections were not so large.

Typhoid immunizations are more common in the rural open country and are least frequent in cities of over 100,000. The greatest variation, however, is geographic; among persons 15–19 years of age living in the surveyed southern states, 31 per cent had been inoculated against typhoid fever, as against 3 to 5 per cent in the other three sections into which the surveyed states were classified.

Urban-rural and geographic differences were not so striking in the case of immunizations against diphtheria and scarlet fever.

The only significant variations as between the sexes occur in typhoid inoculations among adults; the considerably higher frequency among males is presumably the result of compulsory immunization of men in the military services during the World War and since that time in training camps and the like.*

Data for the 12 month period during which periodic visits were being made are presumably more accurate than the histories covering the whole past life. Figure II shows for this period the frequency of artificial immunizations of various kinds per 1,000 persons under observation. Schick and Dick tests made without prior or succeeding immunization during the year and diphtheria antitoxin administered to contacts are also included. Of the total of 2,279 immunizing procedures, 1,209, or 53 per cent (31 per 1,000 persons under observation), were smallpox vaccinations and another 487, or 21 per cent, were diphtheria immunizations. Typhoid immunizations are third in frequency with inoculations of cold vaccine not far behind. All procedures purporting to immunize against any disease are included; this study deals with the frequency of their use and not with their efficacy.

The cases of antitetanic immunization amounted to only 1.2 per 1,000 persons under observation, or 1.7 per cent of all accidents that were reported. The use of antitetanic immunization was largely confined to injuries by cutting and piercing instruments, 6.8 per cent of such injuries being followed by antitetanic vaccination.

Hay fever immunizations amounted to 0.6 per 1,000 persons under observation, or 11 per cent of the 226 cases of hay fever or asthma that were reported. Of the 76 cases reported as hay fever, 25 per cent had some immunizing inoculations during the year, but only 4 per cent of the cases reported as asthma had such inoculations. The percentage of hay fever cases receiving immunizing extracts seems large; it is probable

* More data on the variation of vaccinations and immunizations in cities of different sizes and in geographic areas will be included in forthcoming articles in the *Public Health Reports*.

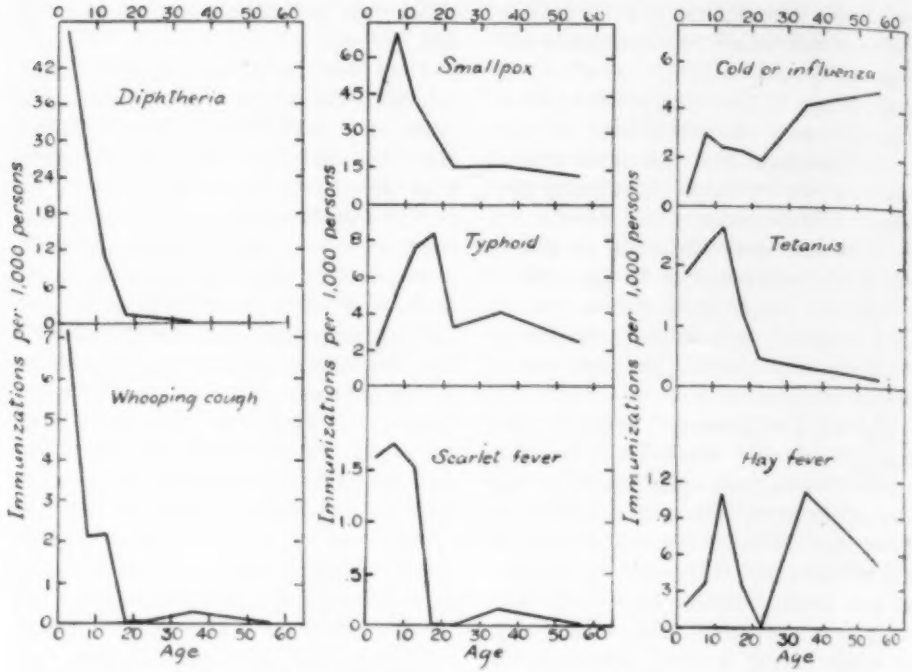

FIGURE III—Annual artificial immunizations against certain diseases per 1,000 persons of specific ages—8,758 white families canvassed periodically for 12 consecutive months, 1928–1931.

that many mild cases of the disease that received no medical care of any kind were not reported.

Figure III shows, for the immunizations that occur more frequently, the rates for persons of specific ages. The data are plotted in 5 year classes to 25 years—an age grouping which shows essentially the same curves as would narrower age classes. Diphtheria immunizations during the study year were more frequent under 5 years than at any other age. Smallpox vaccinations, however, reach a peak at 5–9 years, the frequency being about the same under 5 as at 10–14 years. Typhoid immunizations are much more frequent from 10 to 20 years than at any other age. Scarlet fever, whooping cough, and tetanus immunizations are also confined largely to children. Cold vaccine has a small peak in childhood but the rates are higher in the older ages. Hay fever immunizations show peaks of approximately equal size in childhood and about 40 years of age; although the numbers are small, the curve is probably fairly correct since these two peaks correspond roughly in age to peaks in the incidence of hay fever as reported in these families.[6] The percentage of hay fever cases reported as taking immunizing treatments is twice as high for persons under 20 years as for adults over 20 years of age. In the case of tetanus also, the per cent of cutting or piercing accidents that were followed by antitetanic immunization was much higher for children than for adults.

SUMMARY

1. Between 60 and 70 per cent of adults have been vaccinated against smallpox at some time in their lives.

2. The present rate of artificial

diphtheria immunizations will eventually result in about half of the adult population with a history of such a procedure.

3. In the preschool ages a smaller percentage of children are vaccinated against smallpox than are immunized against diphtheria.

4. Immunizations against typhoid are more frequent in the South than in other sections of the country.

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The General Reader

SCIENTIFICALLY and philosophically trained writers apparently have no idea how hard their books and articles are for the general reader; how much is included that few can appreciate; how many statements are dark and unintelligible to those for whom the book is ostensibly designed. An encyclopaedia or dictionary would seem to be compiled especially for the benefit of the public who are urged to buy it. But the seeker for knowledge who happens to have his curiosity aroused in regard to the polarization of light will find the article in the *Encyclopaedia Britannica* beginning: "A stream of light coming directly from a natural source has no relation to space except that concerned in its direction of propagation, round which its properties are alike on all sides." Like the lovers in Dante's *Commedia*, the simple inquirer is likely to read no farther that day.—James Harvey Robinson, *The Humanizing of Knowledge*, 1924.

The Known and Unknown of Bacillus Pertussis Vaccine*

LOUIS SAUER, M.D., PH.D.

Northwestern University Medical School and the Evanston Hospital, Evanston, Ill.

DANISH State Serum Institute investigators and clinicians have made valuable contributions on *B. pertussis* vaccine since 1916. Miller [1] says:

> The strains are kept on Bordet-Gengou medium until inoculated on the "vaccine medium" (3 parts nutrient agar (calf), 2 parts potato-glycerin agar, and 2 parts defibrinated horse blood). The 3 day growth is washed into 1 per cent formalin in physiological sodium chloride. After formalization for 1 week the suspension is centrifuged, resuspended in 0.5 per cent phenol in physiological sodium chloride and standardized to 10,000 million bacteria per c.c.

For nearly 20 years a standard technic has been in use—the total dosage of 2.2 c.c. is divided into 3 injections (0.5, 0.7 and 1.0 c.c.), given at intervals of 3 or 4 days. Madsen,[2, 3] found this ineffective as a curative agent; given as a prophylactic, 1 to 3 months before exposure, it failed to prevent the disease in 364 nonimmunes. The course was more frequently mild, however, and the percentage of deaths was lower when injections were completed a few weeks before symptoms appeared. Discussing F. McDonald's [4] summary on *B. pertussis* vaccine, R. Smith [5] cautions against hasty conclusions on pertussis immunization. He says:

> Pertussis is such a dread disease that physicians and parents easily take "the will for the deed" so far as proof in relation to prevention is concerned. Enthusiasm has waxed and waned many times. . . . One is certainly justified in using vaccine in an attempt to produce immunity against whooping cough, but one must be honest with himself and with his patients in acknowledging that proof of its protective efficacy is lacking. One must guard against drawing conclusions from a few cases, from clinical impressions, or from uncontrolled statistical reports.

When whooping cough occurs during the first few years of life, its course is often influenced by age, previous health, nutritional state, stability of the nervous system, hygienic care (aseptic nursing), climate and season. In the vaccinated and nonvaccinated the duration and severity often vary greatly. In a crucial study of immunization only nonimmunes between 8 months and 3 years of age should be used. Children should be excluded if they ever had any persistent cough. The very young may not yet possess the power to elaborate immunity from injected antigen, regardless of its potency and dosage; children over 3 may require a larger dosage of antigen, or may already be immune. Because the communicability index for pertussis is about 75 per cent, appreciably more than 25 per cent of the vaccinated should escape the disease

* Read before the Laboratory Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 8, 1935.

when they are definitely exposed to infection. Exposure to infection is more likely to be early, intimate, repeated and prolonged when it occurs within the family. The best controls are, therefore, the nonimmune (nonvaccinated) siblings. Exposure occurs more frequently outside, but doubt may exist when vaccinated nonimmunes escape such transient exposures. Did the patient disseminate bacilli at the time of contact? did the vaccinated child aspirate bacilli? or, was the child immune before vaccination? Diagnosis should be verified by cough plates, repeated white cell and differential white cell blood counts. Of importance is the duration of the cough before exposure of the injected child occurs—also the time interval between vaccination and exposure. Because specific serologic tests are not an index of immunity, and without a reliable skin test,[6] the ultimate test of immunity is exposure to infection.

Between 1928 and 1932, 394 selected young nonimmunes, average age about 14 months, were injected with an especially prepared *B. pertussis* vaccine.[7, 8] Each child was injected with a total of 7 to 8 c.c. (approximately 70 to 80,000 million bacteria). Thirty intimate (familial) exposures to the disease in siblings have occurred; and 169 of the vaccinated children have been exposed (?) a total of 360 times in 7 years. No child injected with this Evanston vaccine has contracted typical whooping cough. A frail girl of 2 years, injected soon after recovery from measles, developed a very mild cough (1 cough plate positive, blood findings repeatedly normal) within 3 months after she had been injected with a total of 7 c.c.; her brother (control) was convalescing from typical pertussis at the time. In 1933, Macdonald and Macdonald[9] reported important inoculation and exposure experiments on humans.

Two commercial laboratories were authorized by Northwestern University Medical School to make this vaccine according to detailed specifications. Freshly isolated, hemolytic strains are sent to them monthly; fresh, defibrinated human blood is used in the Bordet medium; the 3 day growth is scraped off; it is not washed; 0.5 per cent phenol in physiologic sodium chloride is used as preservative and diluent; the sterile product is standardized to contain approximately 10,000 million bacteria per c.c.; it is refrigerated until transported. Jobber, druggist, and physician are cautioned to keep it cold. Table I is a summary of vaccinations with approved commercial vaccines since 1932.

Thirty-three physicians in 19 states have reported a total of 2,945 vaccinations with approved commercial vaccines. The average age of their patients was well over 3 years. Seven children of 3 physicians, and a nurse, were willfully, intimately, and repeatedly exposed to the disease without contracting it. Only a few of the physicians ascertained the instances of exposure, but all reported their failures. A total of 130 known exposures and 21 failures were reported. Most failures occurred in children well over 3 years of age.

The prompt decrease in the incidence of typhoid fever in the Army and Navy, coincident with compulsory antityphoid vaccination in 1912, is accepted as evidence of effective specific immunization. Although typhoid vaccine has been perfected since then, the dosage augmented, and general hygienic measures have improved, typhoid fever still occurs in some of those exposed after vaccination. An authority recently estimated such failures at about 10 per cent. At first, toxin-antitoxin immunization against diphtheria failed to protect about 30 per cent of the injected children. Soon after scarlet

fever immunization was introduced, the number of injections was increased to 5, and the strength of the toxin appreciably increased. With the hope of decreasing the percentage of failures in pertussis immunization, children over 3 years will probably require a total of 10 c.c. or more of the approved commercial vaccine. One, 2, 2 c.c. would then be given in each arm, in 3 consecutive weeks.

Little is known about the factors which may cause failure—the antigen may be impotent when injected, or the individual may not possess the power to develop immunity. Little is known about the stability of the fraction which confers immunity. Endotoxin, prepared according to Besredka's method as described by Bordet [10] was found to contain living *B. pertussis*. Mishulow, Mowry, and Scott [11] obtained a toxic filtrate from bacilli grown on horse-blood chocolate-agar with 1 per cent horse-serum beef-heart broth added. They produced the Schwartzman phenomenon with it. Gundel, Keller, and Schlüter [6] prepared an endotoxin which was very toxic for rabbits and mice; skin tests with dilutions of it showed no specificity; nor was its necrotic action neutralized by the addition of convalescent pertussis serum. Regarding Krueger's [12] endo-antigen, McDonald says: "If the filtrate is water-clear, is one certain that 'cell metabolites' are the only masses filtered out?" Miller's recent complement fixation tests on rabbits, within a few weeks after undenatured endo-antigen was injected, seem to compare favorably with parallel tests on rabbits injected with the Danish vaccine. The relative impotency of the vaccine might be attributed, at least in part, to denaturation effected by the 1 per cent formalin. Truschina, Pechletzkaja and Murawjewa [13] maintain that their bouillon culture filtrate purified by Huntoon's method, contains soluble toxin which possesses specific antigenic properties. Dilutions of it produced positive skin tests more frequently in the nonimmune than in the immune.

No one has shown that immunization is possible with vaccine made from old stock strains, grown without blood. Leslie and Gardner [14] maintain that "Phase I" strains yield the best antigen. Until it is known with certainty whether some strains yield more potent antigen than others, it is advisable to use recently isolated, hemolytic strains. They may probably be used as long as they fulfil the requirements of Leslie and Gardner's Phase I strains. It is of economic importance to learn whether other bloods, *e.g.* sheep, in the culture medium for general use by health departments, orphanages and foundling homes, will yield a safe and potent vaccine. The Michigan State Health Department vaccine, made with sheep's blood, is washed, that of the New York City Health Department is not washed. The work of Kendrick and Eldering [15] and that of Park and Mishulow should determine, within a few years, whether safe and potent vaccine can be prepared without human blood.

The Helber counting chamber, with the vaccine diluted with Callison's fluid, probably yields more constant checks than the Wright or Harrison methods. Uniformity of the vaccine is important, but methods applicable for washed vaccines (Hopkins's tube) yield different counts when compared with unwashed vaccines of identical opacity. The Nephelometer has advantages after an accurate standard has been established, but the latter should not change color in the course of time. The Danish method of carefully matching the density of each new lot of vaccine with a well guarded standard tube of vaccine is simple, quick, and relatively accurate. It is our method of choice.

TABLE I

SUMMARY OF VACCINATIONS WITH 8 C.C. OF APPROVED COMMERCIAL VACCINE

	Number of Injections	Known Exposures	Failures	Age	Interval Between Injection and Exposure	Per Cent Protection
Private Patients (1932 to Sept. 1, 1935)	458	Familial 13 Casual 27	Gilroy Gilroy Kelly Mathews Pick	4 yrs. 7 yrs. 3 yrs. 4 yrs. 6 yrs.	6 mos. 6 mos. 2 yrs. 1 yr. 20 mos.	87.5
Evanston Health Department (1934 to Sept. 1, 1935)	604	Familial 14 Casual 50	Johnson Keefer Spencer Spencer	9 mos. 3 yrs. 2½ yrs. 4 yrs.	8 mos. 8 mos. 5 mos. 5 mos.	93.4
2 Orphanages	242	23	Trush	9 mos.	8 mos.	95.0
Total	1,304	127	10	Av. 3¼ yrs.	Av. 8 mos.	Av. 92.0

Although some children may develop immunity within a shorter period of time, our records show that most children require somewhat more than 3 months for complete immunization. Lymphocytosis, quite like that of pertussis, often occurs within a month after vaccine injection. To give the 3 bilateral injections at shorter intervals (*e.g.*, the 8 c.c. completed within a week) might hasten the immunity response. Work along this line is in progress.

Because whooping cough is a disease of early life, and as most of the deaths occur during the first 2 years, it is desirable to immunize as early as possible. Four hundred (" Cradle ") infants, less than 6 weeks of age, have been injected with a total of 6 c.c. of the approved commercial vaccines. Since December, 1934, 168 have been given a total of 8 c.c. They withstand the injections remarkably well. There have been 9 subsequent exposures. Four of the children escaped, the other 5 contracted mild pertussis. It therefore seems that the best age is between the 6th and 8th month of life.

Warmth accelerates chemical change. Interrupted refrigeration, as during transit, a month on the druggist's shelf, or a few weeks in the physician's bag, acts deleteriously. Mishulow, Oldenbusch, and Scholl [16] elicited complement-fixation reactions with the serum of rabbits, injected with *B. pertussis* vaccine that had been stored for several years at 8 to 10° C. Uninterrupted refrigeration of biological products is a desideratum.

Physicians inquire about the best sequence for immunization procedures and the importance of spacing. Fishbein [17] says:

> Perhaps the best plan would be to allow 4 months to intervene between successive immunization procedures. Because whooping cough causes more deaths in children under 2 years of age than diphtheria, measles, and scarlet fever combined, it is prudent to immunize first against whooping cough—preferably during the second half year of life. Four months later a single alum toxoid injection against diphtheria may be given. Four or more months after, when the Schick test is done, preferably in the spring or autumn, the smallpox vaccination may be done.

Very little is known about the effect of other diseases on the immunity response from injected pertussis vaccine. Two failures occurred in children who were injected with the approved vaccine soon after recovery from measles; another occurred in a girl of 6 who was injected soon after recovery from mumps; 20 months later she contracted typical pertussis. Her injected brother, who did not have mumps, escaped pertussis, although intimately exposed to her for weeks.

SUMMARY

Bacillus pertussis vaccine, like typhoid vaccine, is an immunizing, not a curative, agent. A time interval of several months is required for immunization to be complete. About 10 per cent of the children injected with a total of 8 c.c. of the approved commercial vaccine contracted pertussis when subsequently exposed to infection. Some of the factors which might interfere with the immunity response are controllable.

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Observations Upon the Methods of Transmission of Amebiasis*

CHARLES F. CRAIG, M.D., F.A.P.H.A., COLONEL
U. S. ARMY, RETIRED. D. S. M.

Director, Department of Tropical Medicine and Professor of Tropical Medicine, Medical School, Tulane University, New Orleans, La.

SINCE the widespread outbreak of amebic dysentery, originating in certain hotels of Chicago in 1934, the subject of amebiasis has attracted much attention in the United States and, because of the particular method of transmission in this epidemic, the impression has gained ground in certain quarters that we must revise our theories and our interpretation of facts regarding the transmission of this parasite, due to new and important data which were observed both epidemiologically and clinically during this outbreak.

As a matter of fact, in the opinion of the writer, no new essential epidemiological or clinical data have been secured as a result of the study of the Chicago epidemic, beyond the demonstration that cross-connections between water used for domestic purposes and polluted water supplies or sewers may act as very important sources of infection. While the Chicago epidemic was spectacular in its severity and the number of cases of amebic dysentery that resulted, the fact that water may be a transmitting agent is neither new nor has it been underestimated by students of amebiasis in the past. However, some authorities, because of the epidemic mentioned, have recently endeavored to prove that water is the usual transmitting agent of this parasite and that other methods of transmission, especially that by food handlers, are negligible.

Water polluted with material containing *Endameba histolytica* has been recognized as an important method of transmission of amebiasis ever since the discovery of the etiological relationship of this parasite to amebic dysentery. Almost every writer and investigator has called attention to polluted water as a common method of transmission where the disposal of fecal material was not under sanitary control, so that the mere fact that water may transmit this infection was well known even before the discovery of the relationship of the cysts of *E. histolytica* to transmission. After the discovery of the cysts it was demonstrated by several investigators that these may live in water for a period varying from days to weeks, depending upon the amount of fecal pollution and conditions of temperature.

The writer has repeatedly urged the importance of a polluted water supply in the production of localized epidemics of amebic dysentery and has called attention to our experience in the

* Presented to the Pan American Medical Association, Sixth Annual Cruise, July, 1935.

Philippines during the Philippine Insurrection, as an example. During the time that our troops were engaged in active operations in the field amebic dysentery was very prevalent, occurring in veritable epidemics, and it was the consensus of all who studied these outbreaks that they were due to the drinking of polluted water from wells, springs, water courses, and local tanks, for when the troops returned to their permanent camps where there was a carefully guarded water supply and sanitary precautions regarding food handling were enforced, amebic dysentery soon ceased to be a factor of importance in the health records. That these local epidemics were not due to bacillary dysentery was conclusively demonstrated by laboratory observations, for bacillary dysentery was also prevalent among the troops in certain regions, and the distinction between the two forms was insisted upon by the authorities and made in the army laboratories.

Many years ago the writer and others called attention to the fact that under certain conditions, as the pollution of a water supply used by a large number of individuals, epidemics of amebic dysentery may occur, and while the possibility of such occurrence has been denied by certain protozoölogists upon the basis of purely biological inductions, the fact remains that such epidemics have occurred and will continue to do so when conditions favoring them are present. The Chicago epidemic of 1934 and the still later outbreaks in that city caused by drinking polluted water, described by Bundesen (1935), are merely the most recent examples of the epidemic occurrence of amebic dysentery when conditions are favorable.

The writer has no desire to minimize the importance of water as a transmitting agent of amebiasis, but in this contribution it is desired to protest against a growing tendency to overemphasize the importance of water and to minimize what should be regarded as a much more constant method of transmission, *i.e.*, the food handler who is excreting cysts of *E. histolytica* and who is careless in the observance of personal hygiene.

It is generally conceded that the most important methods of transmission of amebiasis are through a polluted water supply; by means of infected food handlers; through vegetables contaminated by polluted water or sewage; and by the droppings of flies or other insects that have fed upon material containing the cysts of this organism. Of these methods it is certain that the most important are transmission by polluted water and by infected food handlers and it is the relative importance of these two methods that will now be discussed.

There can be no doubt that where cross-connections exist between a domestic water supply and one unfit for domestic use because of sewage pollution, or cross-connections between a domestic supply and a sewer, there is always present a potential danger of infection with *E. histolytica* and that mass infection, severe in type, may occur in this manner. It is also true that despite laws to the contrary such cross-connections exist in the older hotels and public buildings throughout the United States; but the fact that epidemics of amebic dysentery similar to the Chicago epidemic were unheard of before, is certainly proof that such cross-connections have not in the past been of very great importance in the transmission of amebiasis. To claim that this method of transmission is the most important one is not warranted by the evidence, for with the exception of that furnished by the Chicago epidemic, there is none which would indi-

cate that in a well sanitated city with a filtered water supply such a method of transmission is at all common or of great importance.

Under certain unusual conditions where raw polluted water is admitted to domestic supplies or where a large number of people drink a polluted water, as in the instances cited by Bundesen (1935), water may become a very important transmitting agent of amebiasis, but under usual conditions an unprejudiced student of the subject must admit that in cities and towns having a filtered water supply this method of transmission is not of prime importance.

It is in rural rather than in urban localities that water is probably a very common method of transmission. In such regions water for domestic use is usually obtained from wells or springs, and soil pollution with fecal material is of frequent occurrence. It is obvious that if such material containing cysts of *E. histolytica* is washed into the water supply it will result in the transmission of amebiasis by the water so contaminated, and no one can doubt that under such conditions this method of transmission is most important. However, even under these conditions one frequently finds that the person who prepares the food for the family is a carrier of the parasite, so that it is often impossible to evaluate the relative importance of transmission by water or through the handling of food by the infected individual.

Until quite recently all students of amebiasis have been convinced that the usual method of transmission of *E. histolytica* from man to man is by the infected food handler. The Chicago experience has led some authorities to doubt that this method of transmission is of frequent occurrence and some experimental work has been published which the authors believe demonstrates that transmission by food handlers is the exception rather than the rule. Spector and Buky (1934) found that cysts of *E. histolytica* perished within 10 minutes when dried upon volunteers' hands grossly soiled with feces containing them, and these investigators conclude that the results of their experiments demonstrate that transmission by food handlers is not a very important source of infection. However, it should be remembered that even as short a period as 10 minutes is amply sufficient for a food handler to contaminate food if it is handled directly after the carrier leaves the toilet as very frequently happens, and Andrews (1934) has demonstrated that the cysts of this ameba may remain under the finger nails of unwashed hands in a viable condition for periods varying from 5 to 45 minutes and concludes that

> The short survival period of *E. histolytica* cysts on the surface of fingers is no serious impediment to the acceptance of the proposition that food handlers may play a rôle of considerable importance in the dissemination of amebiasis.

This very conservative conclusion of Andrews is justified and, in the opinion of the writer, more than justified by epidemiologic and experimental evidence, for anyone who has had an extended experience with the epidemiology of amebiasis knows that transmission by food handlers is the usual method of transmission where there is a properly constructed public water supply.

Another contribution that has been used as an argument against the importance of food handlers in the transmission of this infection is that by Spector, Foster, and Glover (1935). These observers examined the hands of 74 carriers of *E. histolytica* immediately after passing their feces in the usual manner and found that 5, or 6.8 per cent, were positive for the cysts of this parasite. The hands were not washed

before the examinations were made. They conclude that the small percentage of the carriers whose hands were found positive for the cysts after defecation shows that contamination of food by food handlers who are carriers of this ameba must occur infrequently.

In the opinion of the writer the results of the observations of Spector, Foster, and Glover demonstrate the exact opposite of their conclusions. When it is remembered that in these 74 carriers only one examination after defecation was made and yet 6.8 per cent showed the cysts of *E. histolytica* upon their fingers, one is justified in believing that had from 4 to 6 such examinations been made, after as many defecations, a considerably larger number would have shown the presence of cysts upon their hands, so that their conclusion is not justified because of the small number of examinations that were made.

Furthermore, the fact that as many as 5, or 6.8 per cent, did show contamination of the hands by the cysts is sufficient proof of the importance of the infected food handler in the transmission of the disease. Certainly if in a survey of that number of infected food handlers 6.8 per cent of them, after a single defecation, showed contamination of their hands with cysts, it should be considered conclusive proof of the danger of the transmission of amebiasis by this class of individuals. It is obvious that the conclusion of these investigators that contamination of food by infected food handlers occurs infrequently is not justified, but that their results speak eloquently in favor of the importance of the food handler in the transmission of amebiasis.

The distribution of amebiasis among urban populations, as shown in numerous surveys made by competent observers, demonstrates that contamination of food by food handlers is the chief method of transmission of this infection in such communities, and it has invariably been found that the incidence of infection in such populations is much higher among the ignorant and poor than among the more intelligent classes of the community. That this higher incidence cannot be due to transmission by water has been shown by the fact that the domestic water supply is the same for all classes and cross-connections in plumbing or other sources of water pollution, aside from contamination through food handlers, have not been demonstrated. In fact, the more prosperous classes in any urban community are much more apt to be exposed to infection from water pollution because of the greater frequency with which they eat in restaurants and hotels, where cross-connections in plumbing or back siphonage from a polluted into a safe water supply are much more apt to be present.

The higher incidence of infection with *E. histolytica* among the poor and less intelligent population of a city is believed by the writer to be almost entirely due to the contamination of the food prepared by someone in the household who is a carrier of this parasite. This is shown by numerous instances of familial infection in which a careful study has demonstrated beyond question the source of the infection.

Indeed, in these familial infections with *E. histolytica* we possess the indisputable proof of the importance of the food handler in the transmission of amebiasis, and such familial infections, although much more numerous among the lower classes of our urban populations, are by no means confined to such classes, for the writer has records of many families among the well-to-do and educated in which several members were infected from cooks who were carriers of *E. histolytica*, and where any possible source of water transmission except that furnished by

the food handler could be absolutely eliminated.

As an illustration of this type of familial infection the following may be cited:

> The family of a high-ranking officer of the United States Army, consisting of 8 members, and residing in an army post just outside Washington, D. C., was examined by the writer for infection with *E. histolytica* owing to the fact that the officer had consulted him regarding attacks of slight diarrhea which had occurred at irregular intervals for about a year. Examination in his case disclosed an infection with this parasite and examinations of the remaining 7 members of his family resulted in showing that 4 others had a latent infection with this ameba, *i.e.*, 62.5 per cent of the family showed infection. The cook in this family was a Filipino boy who had worked for them for over a year and an examination showed that he was a carrier of *E. histolytica*. The water used for all purposes was from an impounded and filtered supply furnished the entire post, and the plumbing in the dwelling occupied by the family was in perfect condition with no possibility of pollution by cross-connections or back siphonage. No other cases of amebic diarrhea or dysentery were reported in the post during the time that these examinations were made. The treatment of the infected members of the family and the cook resulted in the disappearance of the infection, and no further infections occurred in this family, although they were all examined at regular intervals over a period of 1 year.

Another instance, personally observed by the writer, in which water directly contaminated by a carrier was the source of infection may be cited:

> In an office where 5 individuals were employed there developed in 1 an acute attack of amebic dysentery, and an examination of the other employees demonstrated infection with *E. histolytica* in 2 others, proving that 3, or 60 per cent, of the personnel were infected with this parasite. A study of the local situation resulted in demonstrating that 1 of the infected individuals cared for the water cooler, cleaning it each morning and handling the ice with which it was supplied. The 2 others who were infected were in the habit of drinking large quantities of water from this cooler each day, while the 2 members of the office personnel who escaped infection never drank water from the cooler but from the faucet of the general water supply of the building in which the office was located. Several hundred people were employed in this building and there was no case of amebic diarrhea or dysentery reported during the time that these infections occurred.

These clear-cut examples of contamination of food and water by handling should alone be sufficient to demonstrate the great danger of the transmission of amebiasis by infected food handlers, but such examples in the experience of the writer can be multiplied many times. As he has stated elsewhere (1935)—

> The *contamination of food and drink by food handlers*, who are passing the cysts of *E. histolytica*, the so-called "carriers," is undoubtedly the most common and most important method of transmission in many localities and certainly so in towns and cities having an impounded water supply and where sanitation is otherwise excellent. Food handlers in our hotels, restaurants, lunch counters, roadside refreshment stands, and other places where food is handled and sold, are the chief sources of amebic infection in well sanitated towns and cities in the United States, and it may be stated that the contamination of food and drink handled by infected food handlers is practically a certainty unless the greatest care is taken regarding personal hygiene and the cleanliness of the hands of those who handle the food. One has only to watch the average salad maker in the average hotel or restaurant to understand how uncooked food may become infected, for each separate leaf of lettuce and each slice of tomato or other vegetable or fruit is actually handled in arranging the salad and making it appear attractive. Cooks and mess attendants, salad makers, bread boys, and even waiters, are often very efficient transmitters of amebiasis.

In conclusion, it may be stated that the evidence available demonstrates that water as a method of transmission of amebiasis ranks second in importance to contamination of food by food handlers who are carriers of *E. histolytica;* that both methods of transmission should be most carefully

guarded against and controlled, if possible; but that efforts to minimize the danger of transmission by food handlers are to be deplored and will result in increasing the already high incidence of an important disease producing parasite of man.

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Safe Toys

. . . In the last year alone 15,400 children under 15 years of age died as the result of accidents, and 13,500 more young men and women 15 to 24 years of age were killed by accidents—a total of 29,000. And that, more or less, is what happens year after year. . . .

The country has told us over and over again that in 30 years we have killed and injured more people by using fireworks to celebrate the acquisition of our independence than were killed in acquiring that independence in the Revolutionary War. . . .

A study is being made by the American Museum of Safety, with the coöperation of the National Society for the Prevention of Blindness and other public health agencies. The study was financed by the fireworks manufacturers, themselves, who are at last beginning to realize the gravity of the situation. . . . There are in hand reports of more than a score of persons who were killed and more than 6,000 who were injured as a result of the celebration of the past Fourth of July with fireworks, firearms and bonfires.

You may ask, why bring these unpleasant facts to an audience of school teachers? The answer is that school teachers probably have a greater opportunity than any other group to influence safe conduct among school children. . . .

School teachers have not only a responsibility for the prevention of accidents on school property, but have an extraordinary opportunity to help children acquire safe habits without at the same time losing the zest for life and adventure. . . .

The records of the National Society for the Prevention of Blindness tell the story of scores of children who lose the sight of one or both eyes each year as the result of shots from air rifles, gifts from fond parents. . . .

We are getting the coöperation not only of the fireworks manufacturers, but of toy manufacturers, in our efforts to make playthings less hazardous, but the time is still far off when we may assume that a toy is safe for a child because its manufacturer or the merchant who sells it says it is. . . .

How to bring safety education to the parents and guardians of these children is the task of all of us—the National Safety Council, the National Society for the Prevention of Blindness, the many other public health agencies in the country, and the public schools as well. . . .—From address by Lewis H. Carris at a meeting of the Child Education Section of the National Safety Congress, Louisville, Ky., Oct. 14, 1935.

Need for Health Instruction in Cleanliness

HUGH GRANT ROWELL, M.D., AND JAMES A. TOBEY, DR.P.H., F.A.P.H.A. (*Life Member*)

Professor of Health Education, Teachers College, Columbia University, New York, N. Y.; President, Westchester Tuberculosis and Public Health Association, Inc., White Plains, N. Y.

IT is no exaggeration to state that, broadly interpreted, modern civilization depends for its existence upon cleanliness. Progressive communities have recognized this fact and have provided their citizens with pure water supplies and safe methods of sewage and waste disposal. As a consequence of these ventures in municipal housecleaning, the former high incidence of certain water-borne and filth-borne diseases has been greatly reduced. Typhoid fever, for example, caused nearly 36 deaths per 100,000 population in the United States in 1900, whereas in 1928 it was responsible for less than 5 deaths per 100,000, and in 1934 23 of our largest cities had no deaths at all from this once ubiquitous scourge.

Diseases due to lack of cleanliness have been reduced, but by no means eradicated. This is because environmental sanitation, no matter how highly developed, is only one of the many factors in health protection. Personal hygiene, as applied to all life situations, is as important in disease prevention as is public sanitation, but for one reason or another individual hygiene in this country seems to be much less advanced than is community hygiene.

THE RÔLE OF THE SCHOOL

The correction of this situation is a responsibility that lies in the laps of our educational authorities. The school takes the child in his impressionable years, gives him knowledge, and teaches him the alphabet of life. It endeavors to inculcate in him proper habits of living, including the way to health through good nutrition and general hygiene. Sometimes, but not always, it furnishes him with an environment that is conducive to good health.

When the school performs these functions adequately and satisfactorily, its influence extends far beyond its own confines, for the school child carries the message of good health into the home. The pupil who has learned that a quart of pure milk a day will give him healthful growth, that this milk ought to be pasteurized, that he must wash his hands before each meal and after leaving the toilet, and that soap has a definitely useful purpose, will contribute these and other necessary hygienic precepts to the entire family, the members of which will be benefitted thereby.

In its health instruction, the school operates best by action rather than by words. Thus, lectures and discourses are much less valuable and effective in teaching good health practices than are actual performances by the children

themselves and by their teachers. A student may learn and recite glibly that moving air at a temperature of 68° F. is most desirable for health, and yet, as frequently happens, the temperature of his own classroom may be maintained routinely at the enervating figure of 74° F.

Similarly, the child may be instructed to wash his hands with soap and water after using the toilet and before lunch, but the school may have neglected to provide soap and towels, and even water, or at least hot water, for this laudable purpose. He may be told that cleanliness is next to godliness, but may have inadequate facilities for bathing at home and none at school, even after participating in athletics and other desirable physical exercise. Physical education is part of the curriculum in most modern schools, but many of them fail to furnish shower baths to remove the perspiration and grime that usually accumulate when children indulge in organized exercise and play.

FACILITIES FOR CLEANLINESS IN SCHOOLS

Extensive surveys of handwashing equipment in schools have revealed that in the majority of our educational institutions the necessary combinations of hot water, soap, and individual towels, conveniently located and in sufficient quantities, are seldom available. Thus, in 1928 it was found from an investigation of 404 schools located in 22 states and the Dominion of Canada, that in only 53.2 per cent of the buildings was hot water supplied, in 80 per cent was some form of soap furnished, and in 84.1 per cent were towels available.

When, moreover, complete and adequate hand-washing facilities were considered, only 32 per cent of these schools could comply with the American Child Health Association's reasonable standards of one lavatory to every 80 pupils, equipped with all three of the necessities for proper ablutions. Only 19.3 per cent of these same schools conformed to the more stringent school health requirements of the Massachusetts Institute of Technology, specifying at least one well equipped lavatory for every 40 pupils, while only 5.7 per cent of them were within the Wood-Rowell standards of at least one lavatory, with hot water, soap, and towels conveniently located, to every 20 pupils.[1]

Another investigation conducted a few years later in 145 schools in 15 states showed that about 99 per cent furnished water, but only about 74 per cent provided hot water; that only 57 per cent supplied soap for general hand-washing; that only about 70 per cent had drying equipment; and, finally, that a mere 31 per cent had all three of these necessary facilities together.[2]

Not only was there a distressing lack of cleanliness equipment in two-thirds of these schools, but in most cases the supplies provided were insufficient for the best results, or were not available throughout the year. The average expenditure for soap per child was estimated to be only about half what it should have been in order to permit each pupil to wash his hands twice a day, a reasonable minimum and far less than any average adult would find acceptable.

The quality of the soap employed in these schools, whether cake, powdered, liquid, or flake, frequently was not well adapted for its purpose or the device was out of order, or out of soap. The efficiency of soap is influenced by the chemical nature of the water available, and also by the purity and composition of the soap itself. A poor grade of soap which has low solubility in a particular water supply, greatly increases the time element required for handwashing and reduces

the efficiency of the process. Poor soaps may also cause irritation of the skin. For these reasons, soap obtained for personal cleanliness in schools should be pure, in the commercial sense, and carefully selected with regard to local conditions. The school janitor is not always an expert with respect to the chemical nature of water and the choice of soap needed to cope with the local supply. The selection of proper soaps has not been brought adequately to the attention of school authorities. Price is only one factor, since cheap soaps, or wrongly selected ones are often the most costly. The traveller in Europe becomes most emphatic on this point following experience with native soaps there.

PURITY STANDARDS OF SOAP

Since the purpose of hand-washing is hygienic as well as esthetic, and since the process, by removing dangerour microörganisms along with dirt, should be a real factor in preventing the spread of communicable diseases, the purity standards of the soaps used in school lavatories are of considerable significance. School administrators should, therefore, have a clear understanding of the germicidal powers of various soaps.

When the human body is involved, the criteria of effectiveness of cleansing agents must be their success in removing dirt, odors, and bacteria; their efficiency in destroying or nullifying the toxic effects of these microörganisms; and, finally, the condition of the human body, chiefly the skin, when the cleansing process has been brought to a successful conclusion.

Chemically, soaps are combinations of strong alkalis, such as sodium and potassium, with weak acids, mainly the fatty acids. They are alkaline products of varying alkalinity, the sodium soaps being generally known as "hard," and the potassium soaps as "soft." A "pure" soap in the commercial sense is one made from high quality fat and possessed of a relatively small amount of free alkali which is an irritant to tender skins and may also cause trouble when the average skin is exposed to it over a long period.

The germicidal properties of soaps have been scientifically studied by a number of competent investigators. It has been demonstrated that pure soaps are highly germicidal against such dangerous organisms as streptococci, pneumococci, meningococci, influenza bacilli, and *Spirocheta pallida*.[3] In other words, ablution with pure soaps aids in reducing the hazards of possible transmission of various respiratory diseases, and of syphilis, if the germs causing these maladies happen to be present on the hands. Soap has likewise been found to be a valuable prophylactic in Vincent's angina.[4]

The use of hot water with soap adds to its germicidal efficacy, part of the effect being due to the heat. Of course, however, the bactericidal action of soap is selective, since the use of pure soap is of little value against such highly resistant organisms as the typhoid bacillus and the staphylococcus, although certain types of specially prepared laboratory soaps will destroy even these bacteria. In this connection it is well to remember that a medicinal odor adds nothing to the cleansing or germicidal value of soap.

In a recently published review of the germicidal value of pure soap, a well known dermatologist reaches the conclusion: "Soaps are potent factors in preventing the spread of disease not only on account of their germicidal action on the common organisms . . . but also because no antiseptic can replace cleanliness."[5] This authority also points out that soap is the most practical disinfectant for everyday life, to be supplemented when the occasion arises by surgical antiseptics prescribed

by physicians, and he also states that pure soap is superior to other types of soap in its germicidal powers.

THE DUTY OF EDUCATIONAL AUTHORITIES

From these facts it is obvious that hand-washing in schools, in industry, and in the home is a prophylactic measure of real hygienic significance. It is the important duty of all school physicians and nurses to recommend most strongly that adequate sanitary facilities and equipment for this purpose be installed where they are lacking, and it is the duty of educational authorities to provide ample means for the carrying out of this salutary practice. If they fail to do so, the parent, as the voter and tax payer, should be heard from. The function of the teacher, as the individual who is primarily responsible for health education in the classroom, is to insist that hand-washing with hot water and pure soap be a routine procedure by all pupils, especially after leaving the toilet and before eating.

The more extensive application of these and other hygienic principles among the 26 million school children of this country will result in a gratifying decline in the incidence of certain types of disease, commonest causes of absenteeism, and by its favorable effect upon school health and upon public health generally, will help to promote a more vigorous and salubrious American citizenry. In these days, when homes must frequently put up with deprivations and economies of relief or wrecked budgets, the school must be able to offer a proper balance in cleanliness, as in other health practices, for the ideals and ideas of growing Americans.

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A Study of B. coli mutabile from an Outbreak of Diarrhea in the New-born*

ANNA DEAN DULANEY, PH.D., AND I. D. MICHELSON, M.D.
Medical School, University of Tennessee, Memphis, Tenn.

DURING the winter of 1933–1934 a succession of cases of a hitherto unrecognized diarrhea occurred among the new-born in the Memphis General Hospital. Forty-seven per cent of the infants affected died.

The disease made its appearance on the 5th to the 9th day of life, and there was no relation to sex, race, prenatal history, or state of nutrition. Since the outbreak occurred during the height of the economic depression, the lack of correlation with the nutritional state is worthy of notice.

The onset of illness was characterized by an elevation of temperature or marked loss of weight occurring within 24 hours. This was followed by a diarrhea which increased in intensity until the stools numbered 10 to 20 per day. The stools were watery, yellowish or yellowish green of color and, surprisingly, free from blood, pus, or mucus.

Vomiting usually followed the feedings, the vomitus consisting of curds of yellowish, partially digested food. Dehydration, septicemia, otitis media, and alkalosis were complicating factors. In cases ending fatally, the infants became cyanotic, respiration was rapid and shallow, and the eyes were sunken.

The physical findings were essentially negative. No medication seemed effective, and in 4 to 9 days the babies either died or gradually improved.

At necropsy the positive findings were dehydration, acute cloudy swelling of the visceral organs, otitis media, and, in several cases, bronchopneumonia. The intestinal tract was negative on gross and microscopic examination.

Extensive bacteriological studies were carried out in the hope of determining the causative agent. Cultures were made from feces, urine, blood; and nose, throat, and ear discharges of the sick babies. Five autopsies were performed and blood, exudates, and swabs from the visceral organs were inoculated to suitable media. The feedings were repeatedly cultured, as were swabs from the nipples of the bottles in order to detect food or hand contaminations. The throat and fecal flora of the mothers and attending nurses were studied. With the possible exception of the fecal cultures the findings were varied and inconsistent, and permitted no conclusions as to a specific causative agent.

Blood cultures from 10 of the babies yielded *B. coli, Staphylococcus albus,*

* Read before the Laboratory Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 7, 1935.

and pneumococci, with *B. coli* as the organism of highest incidence. The possibilities of terminal invasion and skin contamination were recognized. *B. coli* and *Staphylococcus albus* were obtained from the urine cultures; *B. coli*, streptococci, staphylococci, pneumococci from nose and throat swabbings; and staphylococci, *B. coli* and pneumococci from cultures from the ear. *B. coli* was the most common organism found in middle ear infections. The most significant bacteriologic findings at autopsy were the frequent isolations of *B. coli*, and these results will be discussed later.

Repeated culturing of the yellowish watery stools consistently yielded slow lactose fermenting bacilli which proved to be *B. coli mutabile* in a high percentage of cases, and the study of these cultures instigated this report.

METHOD OF EXAMINATION OF FECES AND FINDINGS

The specimens of feces from all babies were obtained by introducing a sterile proctoscope and swabbing the rectum. The swabs were immediately washed off in tubes containing 2 c.c. of sterile physiological saline. Smears were stained by Gram's method. As a rule, the smears showed a mixture of organisms—*B. bifidus*, enterococci, Gram-negative bacilli, etc. The stools of normal breast fed babies contained *B. bifidus* as the predominating organism, over 90 per cent of the organisms were of this type, while the stools of healthy babies artificially fed showed a high proportion of Gram-negative bacilli. Regardless of the type of feeding, the stools of babies suffering from diarrhea gave a high percentage of Gram-negative bacilli, with Gram-positive organisms present in small numbers. The Gram-negative bacilli in the diarrheal stools were single or paired, with rounded ends.

Serial dilutions of the initial fecal suspensions were made so that the last tube was water clear. The three highest dilutions were spread on dry Endo's plates, by bent glass rods. Fecal suspensions from sick babies were also inoculated on blood, and plain agar plates, brain medium, and nutrient broth. All cultures were made in duplicate and grown under aerobic and anaerobic conditions.

The Endo's plates showed the most interesting and significant results. Three chief types of colonies were observed—typical *B. coli* colonies, flat and metallic; small pin-point colonies which proved to be enterococci; and colorless colonies characteristic of the typhoid-dysentery group. The colorless colonies, which when present outnumbered the other types on all Endo's plates, were opalescent, regular in outline, raised, typically smooth, and measured 1 to 2 mm. in diameter. When transplanted to Russell's double sugar a paratyphoid reaction was obtained with active production of acid and gas in the butt and no change in the slant. After 2–3 days at room temperature, secondary colonies appeared on the slant; these were raised, yellowish, circumscribed elevations in the midst of the mass growth. When dilute suspensions of 24 hour cultures on Russell's double sugar were spread on Endo's plates, only colorless non-lactose fermenting colonies were obtained. Within 48 to 72 hours a number of these originally colorless colonies developed red metallic papillæ. We then recognized the organism as *B. coli mutabile* and were able to demonstrate the cycle of colony form described by Neisser (1906)[1] and Massini (1907).[2]

Transplants were made to Russell's double sugar and plain agar, and stored while we made the examinations of feces of healthy and diseased adults. Specimens of stools were collected on sterile swabs, a saline suspension was

made, and spread on Endo's plates. These plates were observed for non-lactose fermenting colonies and sub-cultures were made.

INCIDENCE

The stools of 27 sick babies were cultured and in 18 (67 per cent) *B. coli mutabile* organisms were present in large numbers. As shown in Table I, we also cultured the stools of 41 normal babies and of 118 healthy and diseased adults to ascertain the frequency of this organism and other slow lactose fermenters in normal and pathological conditions of the gastro-intestinal tract. Of 21 normal babies, studied at the time of the epidemic, we isolated *B. coli mutabile* from the stools of 5 (24 per cent). Six months later, when the outbreak of diarrhea had entirely subsided, we examined the stools of 20 other normal babies and did not find this organism in any specimen. Five (10 per cent) of the stools from 47 normal individuals were positive for slow lactose fermenting Gram-negative bacilli, and 1 (2 per cent) proved to be *B. coli mutabile*. Examination of the stools of 28 adults suffering from diseases in which diarrhea may be an outstanding symptom (typhoid fever, dysentery, food poisoning) yielded 9 strains of slow lactose fermenting Gram-negative bacilli, 2 (7 per cent) of which fulfilled the cyclic criteria of this "mutabile" organism. Of 43 parturition patients 9 (21 per cent) showed slow lactose fermenting bacilli, 3 (5 per cent) of which were *B. coli mutabile*.

It is seen that slow lactose fermenting Gram-negative bacilli are increased in pathologic conditions in which diarrhea is a part of the picture, an observation frequently reported. While 32 per cent of sick adults showed such organisms in their stools, the incidence of slow lactose fermenting Gram-negative bacilli in the stools of babies suffering with diarrhea increased to more than twice this figure. All of these organisms proved to be *B. coli mutabile*. Kriebel[3] has reviewed the literature on this question and described such organisms which she isolated from food handlers and persons suffering from diarrhea and vomiting of unknown origin. We made no attempt to classify these miscellaneous slow lactose fermenting bacilli and only studied the organisms which were typical *B. coli mutabile*. The incidence of these unidentified slow lactose fermenting Gram-negative bacilli was increased in the parturition group.

TABLE I

SHOWING THE INCIDENCE OF B. COLI MUTABILE IN THE STOOLS OF 186 DISEASED AND NORMAL BABIES AND ADULTS

Group	*Number*	*Slow Lactose Fermenting Gram-negative Bacilli*	*B. coli mutabile Present*	*Negative for Both*
Sick babies	27	18 (67%)	18 (67%)	9 (33%)
Normal babies	41	5 (12%)	5 (12%)	36 (88%)
Normal adults	47	5 (10%)	1 (2%)	42 (90%)
Sick adults	28	9 (32%)	2 (7%)	19 (68%)
Parturition	43	9 (21%)	3 (7%)	34 (79%)

Autopsy cultures yielded a variety of organisms. *B. coli mutabile* was found in 3 of the 5 cases: in 2 this organism was recovered from the heart blood, spleen, ileum, jejunum, colon, and middle ears. In each case in which a pure culture of *B. coli muta-*

bile was obtained from one ear, cultures from the other ear showed a mixed flora.

While we are reluctant to assign a fixed etiological rôle to this organism, the high percentage of isolations from the stools of infants showing diarrhea, the low incidence in stools of normal babies and normal and sick adults is regarded as highly significant. Additional evidence is offered by the absence of gross and microscopic changes in the intestinal tract and the isolation of this organism from secondary foci of infection at autopsy. Finally, the cultural and serological relationship found to exist among these organisms affords the best bacteriologic evidence of their possible etiological rôle.

OBSERVATIONS ON B. COLI MUTABILE IN RELATION TO LACTOSE

Suspensions from the edge of the colorless mother colony when spread on Endo's plates gave rise to 100 per cent colorless colonies. Within 3 days, approximately one-fourth of these colonies had developed red metallic papillæ, and after 10 days all showed this phenomenon. In most cases, the earliest papillæ appeared near the center of the colony. Papillæ usually developed 1 to 2 days earlier at incubator than at room temperature, but the final number was not different.

When a saline suspension of these metallic papillæ was spread on Endo's agar, both red and white colonies developed. The red typical *B. coli* type predominated; as a rule, less than a third of the colonies were colorless. The white colony showed the S characteristics; the red colony was flat and granular and suggestive of the R type. The lactose fermenting colon-like colony bred true while the colorless non-lactose fermenting colony reproduced the mutabile cycle.

It was thus possible to obtain a red strain which was stable and a white strain which was unstable in that it continued to give rise to some red descendants. We have designated the lactose fermenting organisms as "red" and the non-lactose fermenting organisms as "white," unless otherwise indicated. All efforts to obtain a stable white strain have failed. We tried repeated platings of both young and old colonies—reasoning that very young colonies might be expected to yield only white descendants before red variants had been given off in response to the lactose stimulation, and that variation in old colonies would not occur after active cell division had ceased, but all white colonies, young or old, have continued to yield red papillæ on Endo's plates and apparently all non-lactose fermenting cells are able to give rise to lactose fermenting descendants under the stimulus provided by the lactose. We also tried plating after storage on plain agar, but so far have obtained no stable non-lactose fermenting cultures.

Transplanting of the white strain to Russell's double sugar medium at intervals of 1 or 2 days maintained the paratyphoid-like reaction. If transplantation were delayed for 10 to 14 days, until numerous secondary colonies had developed, a typical colon reaction was produced on the Russell's agar.

Serial passage of the white strain in lactose broth speeded up the rate of lactose utilization. Four to 7 days were initially required for production of acid and gas in 1 per cent lactose broth, but after 7 to 10 passages at 24 hour intervals, it occurred in 48 hours. This is in accordance with the findings of Jones,[4] Kennedy,[5] Kriebel,[3] and others on atypical colon bacilli.

The utilization of lactose was also influenced by the type of culture container. Kennedy[5] states that his slow lactose fermenting organisms broke down lactose more rapidly when grown

in toxin flasks, and we found this to be true. For example, 1 per cent lactose broth of pH 7.4 with bromthymol-blue as an indicator was distributed in 40 c.c. amounts in the following types of containers: 1,000, 250, 125, and 50 c.c. flasks, and a large test tube 200 x 25 mm. A regulation test tube, 120 x 18 mm., containing 20 c.c. of broth served as a control.

All containers received the same inoculum of white organisms prepared by scraping off a single non-lactose fermenting colony from an Endo's plate inoculated 15 hours previously, and suspending the growth in sterile saline. Whereas the indicator showed an acid reaction greater than pH 6.1 in the 3 larger containers by the end of 48 hours, the 50 c.c. flask and the 2 tubes were still neutral. After 72 hours the organisms growing in the 50 c.c. flask had produced sufficient acid to change the color of the broth to yellow while the 2 tubes remained unchanged until 96 hours had elapsed.

When samples from the various sized containers were withdrawn at intervals and spread on Endo's plates the findings varied. The original inoculum and 24 hour samples from all containers yielded only non-lactose fermenting colonies and produced a typical paratyphoid reaction on Russell's double sugar. After 72 hours, samples from the tubes still gave only non-lactose fermenting colonies while Endo's plates inoculated from all 3 flasks showed both red and white colonies. A typical colon reaction was produced on Russell's double sugar. Thus the utilization of lactose was shown to be a result of dissociation; of the production of a sufficient number of red variants to break down lactose, rather than an acquired or latent use of this sugar by the white organisms. It is doubtful if the white forms can ever utilize lactose, but under the stimulus provided by this sugar lactose splitting descendants are produced with the resultant acid and gas.

Jones *et al.*,[4] offer data to show that apparently slow fermentation of lactose by certain strains of *B. coli* is in reality due to production of sufficient ammonia in the early hours of growth to neutralize the acid formed from the beginning. Nungester and Anderson [6] have described a series of variants derived from a colon-like bacillus. Some of these variants produced non-lactose fermenting colonies on Andrade's indicator agar but when grown in lactose broth reversion to lactose fermenting forms took place. Kriebel [3] also states that cultivation of Gram-negative non-lactose fermenting intestinal bacilli in 5 per cent lactose solution stimulated dissociation into lactose fermenting variants.

This dissociation of white to red was correlated with the utilization of lactose. Nutrient broth of pH 7.4 was prepared and 300 c.c. placed in each of 2 flasks of 500 c.c. capacity. Ten per cent lactose solution which has been separately sterilized was added to the broth to give a final concentration of 1 per cent. A single non-lactose fermenting colony from an Endo's plate which had been inoculated with the Garrett strain 15 hours previously was suspended in saline and 1 flask of broth inoculated. The other flask received a comparable inoculum of a lactose fermenting colony of the Garrett strain taken from an Endo plate inoculated with the red form at the same time. Samples were taken immediately after inoculation; part was diluted and used for streaking of dry Endo's plates, the remainder for the quantitative determination of lactose. This procedure was repeated after 8, 19½, 25, 31, 41, 48, and 96 hours' incubation. All plates from the flask containing the culture of white organisms up to the 31 hour period

yielded only white or non-lactose fermenting colonies. The plates inoculated with dilutions of the 31 hour sample were the first to show lactose fermenting organisms. Twelve per cent of these colonies were red metallic colon-like. The plates inoculated with dilutions of the sample taken after 41 hours' incubation gave approximately an equal number of red and white colonies while the plates from the 48 hour sample showed a 75 per cent red and 25 per cent white distribution. After 96 hours, 90 per cent of the colonies were red.

TABLE II

EFFECT OF LACTOSE ON DEVELOPMENT OF RED FORMS

Hours After Inoculation	*Percentage of Colonies on Endo's Plates*	
	White	*Red*
0	100	0
8	100	0
19½	100	0
25	100	0
31	88	12
41	50	50
48	25	75
96	10	90

The plates from the flasks inoculated with the red form consistently yielded only red lactose fermenting colonies. Details of the utilization of lactose are not included here, but while the red form actively broke down lactose from the beginning, the white form did not show definite evidence of using this sugar until 31 hours had elapsed. In other words, utilization of lactose is coincident with the appearance of red variants and lactose apparently has a stimulating effect on the production of such forms, a conclusion reached by early workers. Lewis [7] has recently disputed this conclusion and maintains that variation occurs under any condition suitable for growth. In support of this statement he offers data obtained from plating out cultures grown in various media. He was always able to demonstrate some variant cells, recognized on the basis of size, in colonies grown on any medium by means of densely seeded agar plates. According to him, sugars and alcohols serve as selective agents but do not specifically incite variation. We cannot agree with this since we have not been able to demonstrate the development of lactose fermenting organisms in plain broth or broth containing other sugars than lactose.

When flasks of the same size and containing equal amounts of 1 per cent lactose, 1 per cent dextrose, and plain broths received the same inoculum of white organisms and were grown under the same conditions, dissociation to the red form occurred only in the presence of lactose. Endo's plates streaked from samples of the dextrose and plain broth at intervals over a 5 day period initially gave rise to only white colonies. These in time showed lactose fermenting papillæ. With the exception of one culture in 1 per cent sucrose broth, Nungester [6] was not able to effect reversion of his non-lactose fermenting variant to the lactose fermenting form in any medium other than lactose broth.

Daily transfer for 10 days in 1 per cent dextrose, maltose, saccharose, mannite, broths did not alter the picture when these cultures were subcultured to Endo's plates.

It was also found that the time of coming into contact with the stimulating effect of lactose did not greatly influence the end results. Equal quantities of a suspension of Garrett white organisms were introduced into 2 flasks, one containing 100 c.c. of plain broth and the other 100 c.c. of 1 per cent lactose broth. Conditions of growth were the same. After 24 hours samples from both flasks gave rise only to non-lactose fermenting colonies. After 48 hours the plating from the

lactose broth culture showed that dissociation had taken place and approximately 20 per cent of the colonies were red. The sample from the plain broth yielded only non-lactose fermenting colonies. After the 48 hour sample had been withdrawn from the plain broth culture, sufficient 10 per cent lactose was added to give a final concentration of 1 per cent and the flasks returned to the incubator. After an additional incubation period of 48 hours Endo's plates were spread with samples from the two flasks. A comparable distribution of red and white forms appeared—approximately 90 per cent of the colonies on both plates were of the red lactose fermenting variety. We had thought that late contact with the lactose might not incite variation.

CULTURAL REACTION

Nungester [6] points out that any conclusions regarding fermentation of carbohydrates in liquid mediums by variants of a series must take into consideration the possibilities of variation occurring during the period of observation. He found that certain of his variants differed in their ability to use sugars (maltose and lactose) when grown in liquid and solid mediums containing the same concentration of these carbohydrates. Platings from the culture grown in lactose broth gave rise to a mixture of non-lactose and lactose fermenting colonies.

As previously stated, we repeatedly demonstrated that fermentation of lactose by the white forms of our *B. coli mutabile* strains was brought about by the lactose fermenting forms which developed in response to the stimulus afforded by the sugar.

We also found that apparently slow fermentations of salicin and raffinose were in reality dissociation phenomena with the production of organisms capable of utilizing these sugars in a highly specific fashion.

Rapid fermentation of sugars was never accompanied by any dissociative process. All strains of *B. coli mutabile*—both white and red—produced acid and gas within 18 hours when grown in broths containing the following sugars in 1 per cent concentration—dextrose, maltose, mannite, saccharose, xylose, arabinose, sorbite, rhamnose, levulose. Equally active fermentation was demonstrated on sodium-sulphite-fuchsin agar (3 per cent) containing the same concentration of these sugars—only red metallic colonies forming. Apparently all organisms readily attacked these sugars.

All strains of *B. coli mutabile*—both lactose red and white—failed to break down inosite, melizitose, cellobiose and adonite after 14 days incubation.

Dulcite, salicin, and raffinose were irregularly fermented. All strains except 1 (Shea white) fermented dulcite within 5 days; all strains—both red and white—fermented salicin within 5 days. All 18 red forms produced acid and gas in raffinose broth in 3 to 4 days, but 8 corresponding white forms (Shea, Whitney, Lee, Russell, Byrd, Phillips, Garrett, Rimmer) failed to produce any change in this medium even after 14 to 20 days incubation.

These inconsistent results led us to study the reactions of 2 of our strains, Rimmer and Garrett, toward these sugars under conditions of liquid and solid media. Nutrient broth and sodium-sulphite-fuchsin agar (3 per cent) containing 1 per cent amounts of dulcite, salicin, and raffinose were prepared. These media were inoculated at the same time with suspensions of Rimmer, red and white, and Garrett, red and white. The inoculums were prepared by scraping off isolated colonies from Endo's plates, inoculated the previous day, and suspending the

TABLE III

SHOWING THE REACTIONS OF GARRETT AND RIMMER (LACTOSE RED AND WHITE) IN BROTH AND ON SODIUM-SULPHITE-FUCHSIN AGAR CONTAINING THE SAME SUGARS

Strain	Dulcite		Salicin		Raffinose	
	Broth	Agar	Broth	Agar	Broth	Agar
Garrett White	A.G.-4 da.	Colorless colonies in all cases. No metallic papillæ. Sub-cultures from broth yielded only colorless colonies.	*A.G.-3 da.	Originally colorless colonies all of which gave rise to metallic papillæ in 4 days	Neg.-20 da.	Only colorless colonies; no metallic papillæ
Garrett Red	A.G.-3 da.		*A.G.-3 da.		*A.G.-4 da.	Colorless colonies with metallic papillæ 2 days
Rimmer White	A.G.-3 da.		*A.G.-3 da.		Neg.-20 da.	Only colorless colonies; no metallic papillæ
Rimmer Red	A.G.-3 da.		*A.G.-3 da.		*A.G.-5 da.	Colorless colonies with metallic papillæ 4 days

* Sub-cultures to agar produced both white and red colonies.

growth in a small amount of saline. A summary of these results is given in Table III.

Dulcite agar plates inoculated with these four organisms, Garrett, white and red, Rimmer, white and red, showed only colorless colonies. Even after 5 days there was no change in the general appearance nor had metallic papillæ developed. Dulcite broth, however, was fermented by all 4 organisms in 3 to 4 days but when these cultures were spread on dulcite agar plates only colorless non-dulcite fermenting colonies developed. Apparently, dulcite affords an example of true slow fermentation.

Salicin agar plates inoculated with the 4 organisms originally yielded only colorless colonies. After 4 days all colonies were studded with metallic papillæ. The salicin broth was broken down in 3 days and when these cultures were spread on salicin sodium-sulphite-fuchsin agar, both white and red colonies appeared. Here we have an example of true dissociation with salicin red forms developing in liquid and solid medium in response to the stimulus afforded by the sugar.

In the case of raffinose we demonstrated a third type of reaction. Raffinose broth was not fermented by either Garrett, white, or Rimmer, white, even after 20 days, but both Garrett, red, and Rimmer, red, formed acid and gas in 4 to 5 days. When these red cultures were spread on raffinose agar both white and red colonies were demonstrated. Inoculation of the raffinose agar plates from the original inoculum produced colorless colonies. After 2 days Garrett red colonies showed many metallic

papillæ and after 4 days the Rimmer red colonies had also developed metallic papillæ. In this case we have an example of specialized fermentation of raffinose by the lactose red organisms due to the production of raffinose red descendants.

We plan to extend these studies to other strains. It is possible that we may be able to demonstrate dissociation to dulcite, and since some of the white forms did ferment raffinose we would expect to obtain both white and red colonies on raffinose agar upon sub-culture.

In no case was the reaction of these organisms toward lactose altered. Salicin, red and white, and raffinose, red and white, organisms when subcultured to Endo's plates produced colonies characteristic of the original type. In other words, variation to lactose was not altered by contact with other sugars.

It seems possible that such a dissociation phenomenon may often occur and that slow fermentation of sugars should be investigated from this standpoint. It is not unlikely that certain difficulties in classification of some of these intestinal organisms could thus be eliminated.

An acidity developing in 2 to 4 days with the production of curds characterized the growth of all strains in litmus milk; no peptonization occurred.

Indol was formed in Dunham's peptone broth by the red and white forms of all strains.

Nitrates were reduced to nitrites and ammonia formed in nitrate broth. The methyl red reaction was positive, the Voges-Proskauer reaction negative.

Gelatin was not liquefied after 14 days.

AGGLUTINATION TESTS

Agglutination tests were carried out with the sera of 43 patients—5 sick babies, 13 healthy babies, 13 mothers, 10 sick adults, and 2 normal adults. For antigens we used heat killed saline suspensions of *B. coli mutabile*, Rimmer and Garrett, and *B. coli communior* from feces. We also immunized rabbits with the white and red forms of 9 strains of *B. coli mutabile* and tested their sera for agglutinins for homologous and related strains of *B. coli mutabile, B. coli communior, B. typhosus, B. paratyphosus* A and B. The results are summarized in Tables IV and V.

It is obvious that agglutinations on sera of babies do not offer proof of the etiological rôle of this organism. A higher percentage of the sera of sick babies than of well babies agglutinated this organism but our series is too small for conclusions. Fothergill [8] was only able to offer serological evidence of pathogenicity in 2 cases of his series of babies suffering from diarrhea the stools of whom yielded atypical paratyphoid-like organisms. In view of the age of the infants it must be remembered that any agglutinins may not have been formed in

TABLE IV

RESULTS OF AGGLUTINATION TESTS ON SERA OF 43 PATIENTS WITH B. COLI MUTABILE ANTIGEN (RIMMER)

		Highest Dilution of Serum Showing Agglutination					
Group	*Number*	*Neg.*	*1:20*	*1:40*	*1:80*	*1:160*	*1:320*
Sick babies	5	3	1	..	1	..	..
Normal babies	13	8	3	1	1	..	..
Mothers	13	1	..	1	5	6	..
Sick adults	10	2	..	2	3	3	1
Normal adults	2	..	..	1	1	..	..

response to an infection but may have been passively acquired from the mother.

Rabbits were immunized by introducing the antigen into the marginal ear veins. By giving the rabbits 2 series of 5 injections at 1 day intervals with an intervening rest period of 5 days we were able to produce high titers of agglutinins. We can offer no exact results—it may be stated that some of our strains were highly toxic to rabbits when injected in the fresh state and we used heated cultures for most inoculations.

While rabbits were immunized with 9 cultures and the sera tested with heat killed antigens prepared from all strains, no attempt is made to present the complete results because of the involved charts necessary.

A striking serological relationship was demonstrated among all strains of *B. coli mutabile* isolated from sick babies. The sera of rabbits immunized with any one strain agglutinated all antigens to approximately the same titer. No marked antigenic differences between the white and red organisms were apparent. In most cases the red organisms were agglutinated to higher titers than the white —even by white sera. This happened after every effort had been made to prepare red antigens in a manner that would eliminate any tendency toward spontaneous clumping because of the granular character of growth.

No close antigenic relationship existed between our *B. coli mutabile* strains and *B. coli communior* isolated from feces during routine examination. Likewise there was no marked cross-agglutination with typhoid or paratyphoid organisms.

Table V presents a summary of some of our serological tests.

SUMMARY

1. *B. coli mutabile* was isolated from the stools of 67 per cent of new-born babies suffering from an unrecognized type of diarrhea.

2. Stable lactose fermenting and unstable non-lactose fermenting (in that lactose fermenting descendants continued to be given off) could be derived from all cultures.

3. Dissociation to the lactose fermenting form occurred under stimulation of contact with lactose. Lactose exerted a specific effect since no other condition of growth produced the same result.

4. Utilization of salicin and raffinose was shown to be similar to that of lactose and depended upon the development of variants capable of fermenting these sugars.

5. Biologically the organisms are closely related to *B. coli communior*, but no close antigenic relationship was demonstrated.

6. All strains of *B. coli mutabile* isolated from sick babies were found to form a homologous group when tested with sera of rabbits immunized with red and white forms.

7. Substantial proof that *B. coli mutabile*

TABLE V

SHOWING RESULTS OF AGGLUTINATION TESTS WITH SERA OF RABBITS IMMUNIZED WITH B. COLI MUTABILE AND OTHER INTESTINAL ORGANISMS

	Titer to Which the Following Antigens Were Agglutinated											
Sera	*Russell White*	*Russell Red*	*Terrell White*	*Terrell Red*	*Garrett White*	*Garrett Red*	*Byrd White*	*Byrd Red*	*Para A*	*Para B*	*Typhoid*	*Coli Communior*
Russell White	10240	10240	5120	5120	1280	10240	10240	10240*	40	40	40	80
Russell Red	10240	10240	10240	10240	1280	5120	5120	10240*	40	40	40	80
Terrell White	1280	5120	2560	5120	640	5120	2560	5120	40	40	80	160
Terrell Red	2560	10240	2560	10240	1280	10240	5120	10240	40	40	40	40
Paratyphoid A	40	40	40	40	40	40	40	40	5120	320	640	40
Paratyphoid B	40	80	40	40	40	80	40	160	320	10240*	1280	160
Typhoid	80	80	40	80	40	40	40	40	320	320	10240	80
Coli communior	80	160	160	80	80	80	160	160	40	40	40	320

* Titer not reached

was the cause of the outbreak of infant diarrhea is presented, but it is admitted that the predominance of these organisms may have been secondary and an unrecognized organism the primary cause.

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Oh Enema!

Un petit clystere insinuatif, préparatif et rémollient pour amollir, humecter, et refraicher les entrailles de Monsieur.
—Molière

IT is said that the enema habit was introduced into England from France early in the nineteenth century. I have searched my library of English health books which goes back to 1589 and find the first references, with the exception of one author, in 1807 and in 1828. The exception is Francis Bacon, Lord Verulam (1550–1626), in whose writings I have found three references to the "clyster" which was the English word for enema in his time and is, you will note, practically the same word as used by Molière. But Lord Bacon was unusually erudite and there is no doubt that the enema was more popular at that time in France than in England. Sir John Sinclair (1807) notes that, on page 284 of the Manual of Health, "there is an amusing story connected with the subject of lavements, regarding the lively and amiable Duchess of Burgundy who was the Rosalind of the court of Louis XIV and who was accustomed to take them previous to her going to the theater."

Unfortunately I have never been able to find that Manual of Health. But the word lavement which is the modern French for enema has had an unfortunate influence on our practice. In the Anglo Saxon tradition a washing demands soap and so to the ancient clyster or glyster soap was added, as it never had been before, and colons suffered in consequence. Doctor Hurst believes this evil practice still to be limited to the British Isles. Alas we know better.—J. Rosslyn Earp, Dr.P.H., *New Mexico Health Officer*, Aug., 1935.

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THE SIXTY-FOURTH ANNUAL MEETING

THE 64th Annual Convention of our Association is a thing of the past. The meeting in Milwaukee will go down as one of record. The attendance was next to the largest which we have ever had and the largest by far since the registration fee has been charged.

Of the arrangements made for our comfort and the efficiency with which they were carried out, it is impossible to speak too highly. The Milwaukee Auditorium, although not so new as some others, and perhaps not quite so big, is most admirably fitted for a large meeting, with an abundance of halls in which the acoustics are excellent.

The service was the best that we remember. Each room was supplied with one "monitor" and often two. In every meeting room there were lanterns, an officer to turn the lights on and off and another to operate the projection apparatus, so that it was a matter of a minute at most to go from lantern slides to text and back again. For the first time admission to the halls depended on the official badge and these monitors gave great assistance in protecting the sessions from the idle curious.

The Auditorium is abundantly provided with rest rooms and toilets, and there was also a good restaurant for simple meals, so that one could spend the entire day without returning to the hotel which was headquarters—some two blocks away. All meetings were held in the Auditorium and all breakfasts, luncheon meetings, dinners, and banquets at the Hotel Schroeder.

Our meeting was preceded by The Health Education Institute which has come to be an established feature. The attendance was 128. The general subject taught this year was "Health Education Applicable to Smaller Communities."

For the first meeting day, Monday, the 7th, there was a large attendance, running to 1,600 by noon. Our total attendance was 2,041. The programs, of

which we believed we had a full supply, were exhausted on the second day of the meeting. In spite of the abundant provisions made by the Local Committee, all registrations for all the inspection trips were in excess of the facilities. The banquets, luncheons, and dinners were all over-subscribed. The meeting rooms were full and on some occasions the session had to be adjourned while larger halls were made ready for the audience. All of this was true in spite of the fact that the arrangements were better than we have ever had before.

Among the unusual features was a tea at the Schroeder Hotel given by the Local Committee on Sunday, October 6th, which was tremendously attended. A Tyrolean orchestra was provided, with excellent singers, in costume. Special Tyrolean dances beautifully done and most entertaining were given. The guests sat at tables and feasted. In addition, at 6:00 o'clock in the evening the Local Committee gave a dinner ostensibly for the Governing Council, but all members of the Association who were present were invited. Again we had delightful music and special dancing by local artists.

On Monday evening, the first General Session was held. The welcome was given by Daniel W. Hoan, who has been Mayor of Milwaukee for some 20 years, and who has made of Milwaukee one of the safest and most prosperous cities in the United States. Address of the President of the Association, Dr. E. I. Bishop, followed. A most unusual and delightful feature was the presence of the Honorable Josephine Roche, Assistant Secretary of the Treasury, in charge of public health, who gave an excellent address. The Sedgwick Memorial Medal was awarded to Dr. Haven Emerson of New York, the presentation being made by Dr. William H. Park, a former recipient of the medal. The meeting ended with the usual reception and dance.

On Tuesday night a banquet at which approximately 900 people were seated was provided through the courtesy of the Krim Ko Company of Chicago. A most witty toastmaster, Judge John C. Karel, introduced those sitting at the head table, one by one, speaking to the Mexicans in Spanish, the French-Canadians in French, the Poles in Polish, and to Americans in Americanese. The occasion ended with the singing of well known German songs in which the entire audience joined.

On Wednesday night the annual banquet was attended by more than 600 persons. Dr. Walter H. Brown was inducted into office as President, and gave a scholarly address. A pleasing incident was the presentation by the State and Provincial Health Authorities of North America of an Honorary Life Membership to the retiring President, Dr. Bishop. Dr. C. A. Harper, Health Officer of Wisconsin, the oldest state health officer in this country in years of service, made the presentation in the name of that society.

The exhibits, both commercial and scientific, were unusually large and well prepared. Among the scientific exhibits, citations of merit were awarded to the Marquette University School of Medicine, the University of Wisconsin and State Board of Health of Wisconsin, Laboratory of Hygiene, the Commonwealth Fund of New York, the Wisconsin Anti-Tuberculosis Association, the Milwaukee County Chapter of the American Red Cross, and the American Medical Association of Chicago, Ill. The exhibition halls were at practically all times well filled, and one was forced to the conclusion from the attendance at the meetings in general, the number and size of the commercial exhibits, and the interest shown in them by the public, that conditions throughout the country are better than for several years.

Among the distinguished visitors was Dr. Einar Rietz, Health Officer of Stockholm, Sweden, who addressed a dinner session of the Health Officers. From Mexico we had a single representative—Dr. Angel de la Garza Brito. Our sister republic on the North was better represented than usual. From several provinces we had 17 distinguished men headed by Dr. R. E. Wodehouse, Deputy Minister of Health. From Ottawa came also Dr. Norman Harris, Director of Hygiene of the Federal Department of Health, Mr. Lancaster of the Food and Drugs Department and Mr. Tracy of the Bureau of Vital Statistics. Montreal was represented by its distinguished Health Officer, Dr. Boucher and his Sanitary Engineer, Mr. Cousineau. The Connaught Laboratories sent Dr. Defries, accompanied by Professor Don Fraser. McGill University was represented by Dr. Grant Fleming, Professor of Hygiene.

Dr. Gordon Jackson, the successor of Dr. Hastings, for many years a member and past president of the Association, came from Toronto. The Ontario Department of Health was represented by Dr. John T. Phair. From far Quebec Dr. E. Langevin of the Provincial Department of Health came. We regret that a number of familiar faces were missing.

The Metropolitan Life Insurance Co. sent its representatives, Mr. Burnette and Miss Alice Aherne from Ottawa.

We must express the most sincere appreciation for the coöperation given to us by the local and state authorities as well as by all other agencies. An excellent performance must be recorded on the part of the press and the radio—national, state, and local.

We offer our most sincere thanks to Dr. John P. Koehler, Chairman of the Local Committee, to whose untiring efforts and efficiency the success of the meeting has been largely due. His unfailing courtesy and foresight made the way smooth and pleasant for all of those in attendance. Milwaukee will long be remembered for its bounteous hospitality.

TRIALS OF THE HEALTH OFFICER

A RECENT occurrence in California gives an idea of what health officers may meet with in carrying out their duties. In the spring of 1935, a bakery which sold and distributed bread in San Francisco put out a whole wheat product, on the wrapper of which were the words "Relieves Constipation Nature's Own Way." Newspaper advertisements carried the same phraseology.

The Director of Public Health of San Francisco believed that this was a violation of a section of the Pure Food and Drug Law of the city and county, as well as of a similar section of the Pure Food and Drug Act of the State of California. A conference of those concerned in the baking industry, at which there was also a representative from the State Board of Food and Drug Inspection, was called and held at the Department of Public Health. Free discussion took place. The baking plant involved agreed to remove the phrase "Relieves Constipation Nature's Own Way" from its advertising and also from the bread wrappers. An executive order was issued by the Director of Public Health prohibiting the sale and distribution of bread and other bakery products so labelled as to indicate that the use of such products would relieve constipation and that the said products possessed laxative properties.

Soon after, the bakery in question revived its advertising campaign, con-

fining itself to bill-boards and newspapers. The phrase "Avoid Constipation the Natural Way" was substituted for the older one. The Department of Public Health held that the meaning was practically the same.

The advertising agency employed by the bakery challenged the legality of the executive order issued by the Director of Public Health, and the matter was referred to the City Attorney, with the following result:

> The city attorney holds that the Director of Public Health cannot prohibit the distribution of this bread by virtue of an executive order; and any order of the Director of Public Health must be predicated upon the provisions of an ordinance enacted by the legislative branch of the city government, to wit, the Board of Supervisors. The second part of the opinion of the city attorney relates to the validity of the label now used by this Baking Company, namely, the use of the phrase "Avoid Constipation the Natural Way." In the opinion of the city attorney the use of the expression "Avoid Constipation the Natural Way" is of such a gen. ic type as to fall within the category of trade exhortation or invitation rather than positive declaration as would be assigned to statements as "cure" or "relieve" constipation.
>
> The bread in question is a whole-wheat bread containing, besides the natural ingredients, honey and an ingredient—so-called secret formula—claimed to impart to the bread its alleged virtue in relieving constipation. A report from a private laboratory concerning this ingredient is couched in the following language: "A concentrated plant product which has cathartic properties, and when used in specified amount in bread has a mild laxative effect without harmful or unpleasant after effects. Sample as submitted contains no toxic or harmful constituents when used in proper amount."

The Department of Public Health of the city and county of San Francisco is not convinced, and still holds the opinion that such bread is not necessary in the American dietary, and, further, that the advertising used in this sales campaign will have a prejudicial effect upon the consumption of bread.

THE OPEN FORUM

REGINALD M. ATWATER, M.D.

Executive Secretary, American Public Health Association

"TWENTY-FIVE YEARS OF LIFE CONSERVATION"

THIS publication from the Metropolitan Life Insurance Company is unique in its field. It is a record of the organized welfare work of the company on the occasion of the 25th anniversary of the establishment of this Welfare Division but it has much wider significance. It illustrates well the great possibilities of conserving human life inherent in the institution of life insurance. This record also presents striking evidence, as the foreword points out, of the important interrelations which must exist among all groups working to protect health and to extend life. In recognizing the contribution of the public health profession toward these achievements there is an added word of recognition which organized public health owes to the pioneering leadership of the late Dr. Lee K. Frankel and his associates who have so ably furthered the development of many activities both within and without the company itself. As a means of interpreting the life-saving facts of medical science and passing them on to the public in words they can understand, this record is very significant.

In these 25 years—

> . . . the people of America have experienced war, pestilence, flood, drought, unprecedented extremes of heat and cold and a valley of deep depression. Yet, in this quarter century more than eight years—3,000 days—have been added to the average life span of the general population and this "vast gift of days" has gone chiefly to the young.

I know of no better condensed summary of the progress of public health during this period than that in this publication, which is well illustrated with understandable graphs of tuberculosis, typhoid fever, diphtheria and infant mortality. It would be an excellent text book for educational classes, for it shows what applied science can do in the extension of life. The place of this Association and its committees is well described. It is worthy of note, as the 15th birthday of our Committee on Administrative Practice is being celebrated, that the original grant for the purposes of this committee came from the Metropolitan, which has made grants each year since for the purposes of the Association. Those wishing to secure copies should write Dr. Donald B. Armstrong at One Madison Avenue, New York City.

WHITE ELEPHANTS

NOT a few health agencies have turned the present difficult economic situation to their own great profit by securing gifts of properties suitable for their purposes from persons and estates which regarded these possessions as great burdens. It has been most gratifying to note with what an enthusiastic welcome the idea of a gift has been received by some of the prospective donors who, tired of the mounting tax bills, and eager for some solution, find that a gift to such an agency provides a splendid chance to help public health and get out from under a difficult problem. From the standpoint of the agency it is often possible so to arrange the ownership of the property as to provide for tax-free

use and in this manner to free funds previously used for rent on quarters perhaps much less suitable for the purpose of the organization.

Sometimes it is possible to find a residence of the type popular some years since which is well located and capable of arrangement to accommodate a health center. It is surprising how the use of a few partitions and redecorating can transform one of these buildings into a place suitable both for health department offices and clinic purposes. Not infrequently the whole atmosphere of a department can be raised through such a new provision of space and the health department sometimes profits greatly by separation from certain other governmental agencies which still are known for their partisan political activities.

In other places it has been possible to provide through such gifts of residence property a community center where most of the health and welfare offices may be consolidated. The testimony of some who have tried it indicates that it does a health department staff no harm to see their colleagues in welfare and character-building agencies at frequent intervals. Such a plan serves to emphasize the essential community of interest between officials of the city or county and the executives of health and welfare associations, the visiting nurse group, the Red Cross, the Boy Scouts, and similar agencies. Often the coöperation of service clubs, community chests, etc., can be readily obtained to make it a community unit of large significance.

This type of project has been accomplished in numerous communities from California to New York. It might be achieved in a good many other places if this idea could strike fire in the mind of somebody who would take advantage of this difficult time and perhaps be responsible for opening a new door for health service in his locality.

HEALTH ADMINISTRATION IN NEW YORK STATE

THERE has come to my desk a recently published outline of the administrative procedure in the New York State Department of Health, published in connection with the Extension Course in Public Health given by the department and of which Dr. Don M. Griswold is in charge. Those interested in the description of the routine in this outstanding state department will find each division explained as to its objective and methods. There are illuminating diagrams of the division of responsibilities among the large state staff and their relationships with the 796 local health officers serving 1,222 health districts. Dr. Griswold advises that he is interested in an interchange of information with other departments on this subject. This outline should prove valuable to other administrators and to those teaching public health administration.

IF AND WHEN

SO many questions are in the minds of health officers and others these days about the terms on which grants will be made to states for maternal and child welfare under the Social Security Act that it seems desirable to call attention to an enlightening document on the subject. "Grants to States for Maternal and Child Welfare under the Social Security Act" has been published by the Department of Labor for the Children's Bureau. This publication, which is obtainable from the Superintendent of Documents at 10 cents, describes the provisions of parts 1, 2, and 3 of Title V of the act on Maternal and Child Health Services, Services for Crippled Children, and Child Welfare Services. The anticipated apportionment of funds to the several states is described and the special allowances to each state for ratio of rural population to total rural population will be in-

teresting in view of the special rural provisions of the bill.

RURAL APPRAISAL FORM

DURING the past year there have been more systematic appraisals of rural health services than ever before, due largely to the new Rural Health Conservation Contest sponsored by the United States Chamber of Commerce in coöperation with this Association. Repeatedly it has been evident that the *Rural Appraisal Form* as published in 1932 has been useful and stimulating to health officers in objectifying their own work and for purposes of comparison with other records. Many of those who have used these forms have pointed out what seemed desirable directions for improving the appraisal schedule and careful note has been made of these suggestions.

Now preparations are under way for the revision in 1936 of this schedule and the time is ripe for those who have ideas on this important subject to send them in. I am sure that by this type of coöperation we all can profit through a more adequate appraisal form for years to come. Send in your suggestions. They will be carefully considered by the committee. I can loan you a copy of the *Rural Appraisal Form* if you wish.

PUBLIC HEALTH AND RACE PROGRESS

THE following editorial is reprinted by permission of the Editor of the *New York Times*, from the issue of Friday, September 27, 1935. It is an answer to one type of critic familiar to the health officer:

"PROTECTING THE UNFIT"

The president of Colgate University is worried. "Nothing could threaten the race," he tells us, "as seriously as social legislation. It is begging the unfit to be more unfit and inviting the fit to join the ranks of the unfit." The sins of the philanthropists are equaled only by those of the doctors, who have "done everything they could to keep the unfit" and to curb "nature's natural checks." He wants us to weed out the feebleminded, and he fears that even old-age insurance "removes one of the points of pressure which has kept many persons up to the strife and struggle of life."

A curious aroma of nineteenth-century evolutionism floats over these strictures. Perhaps if Dr. Cutten studied the matter a little further he would be less disturbed. What are the crimes that doctors and social legislation have committed? One of their greatest achievements has been a material reduction in the infant mortality rate. In New York City, for example, there was a steady reduction from 113 per 1,000 births in 1910 to 53 per 1,000 in 1933. How has this been achieved? Through increasing precautions to insure a clean, safe milk supply. By increasing knowledge of hygiene, the provision of visiting nurses, medical supervision and advice for expectant and nursing mothers. By increasing knowledge of how to combat specific diseases. There is no evidence whatever that any of these measures have weakened the stock.

What has been done by social legislation in industry? First, there is factory inspection, to insure sanitary conditions, air and light, fireproof buildings. Next there are measures limiting excessive hours of work, night work for many women, child labor. Do these measures increase the number of unfit? Finally, there are the measures, long known to Europe, now just being introduced here, to provide unemployment insurance, old-age insurance and unemployment relief. Of these the first two hardly do more than mitigate somewhat the evils and insecurities that at some time or other affect the majority of us. Only the last can be said to be a measure to "protect the unfit," and then only if it is continued indefinitely. There is no evidence to show that the great majority of the present unemployed are any more "unfit" than the majority of the employed. And if Dr. Cutten is doubtful over old-age pensions—to people over 65—because it "removes one of the points of pressure which has kept many persons up to the strife and struggle of life," he ought surely to be even more doubtful about allowing vigorous young men to inherit enough wealth so that they do not have to work at any time.

"Nature," Dr. Cutten tells us, "provides immunity to certain diseases by eliminating all those who contract the diseases. Now we have a protected race rather than a resistant race." But the creation of protections is almost a definition of civilization

itself. If we were to carry Dr. Cutten's argument to its logical conclusion, we should abandon our present efforts for assuring an uncontaminated water supply, which has done so much to eliminate typhoid and cholera, and give up such fancy services as food inspection, drainage and sewage disposal. As soon as we heard of an epidemic we should, on the contrary, expose everybody to it to make sure that the unfit were eliminated. Perhaps even that would not do much good. Dr. Cutten may be discouraged to learn that geneticists have calculated that even if all the feebleminded of this generation could be sterilized it would reduce the feebleminded of the next generation by only one-tenth to at most a fifth.

EPIGRAM

"There is more true motherhood in giving children toxoid than in embroidering their petticoats these days."
—Elizabeth Cook.

BOOKS AND REPORTS

The Principles and Practice of Medicine—*Originally written by the late Sir William Osler, M.D. Revision by Thomas McCrae, M.D. New York: Appleton-Century,* 1935. 1196 pp. Price, $8.50.

Few books have ever enjoyed such popularity as this, the preface to the first edition of which is dated January 1, 1892. It has been copyrighted 18 times. Since the death of Sir William Osler the revisions have been prepared by Dr. Thomas McCrae, and the present 12th edition has a peculiar and sad significance in the death of Dr. McCrae on June 30 of this year, just after the book appeared.

This edition has been completely reset and a new type adopted which is not only considered easier to read, but allows more words to the page. The preface points out changes and additions in practically every part of the book, but especially in the discussion of diagnosis and treatment. Some new sections have been added and others materially altered. A list of these given in the preface makes for easy comparison.

It would require a great amount of boldness to criticise a work which has been so thoroughly reviewed in every part of the English speaking world and has remained a standard for so many years.

We have always felt that proper treatment of contagious diseases, with isolation and scientific disposal of the discharges of the body played a great part in prevention. It goes therefore without saying that those engaged in public health work should have a sound knowledge of disease and the handling of cases. We know of no book which can be recommended more fully for this purpose than the one before us. The printing and make-up are excellent.

MAZŸCK P. RAVENEL

New and Supplementary Facts and Figures About Tuberculosis—*By Jessamine S. Whitney. New York: National Tuberculosis Association,* 1935. 46 pp. Price, $.50.

The present edition is issued so as to make available revised and more recent data, and additional matter.

As the title implies, the booklet is confined mainly to statistics; there is no text, except for introductory comment in the section on tuberculin tests. The 36 tables fall, in the main, into the following classes:

(a) Mortality from tuberculosis, and its variation with age, race, sex, form of disease, time and place (22 tables);

(b) Tuberculous infection: seven tables showing the results of tuberculin tests, in various age groups, by sex, as reported by various observers in the scientific literature;

(c) Miscellaneous data concerning hospital beds, stage of disease on admission to sanatoria, volume of tuberculosis nursing service, and seal sale receipts.

Anyone interested in tuberculosis will want to have a copy of this useful publication constantly at hand. The question might be discussed whether its usefulness might not be enhanced by the addition of graphs for some of the age and time series. For example, the interpretation of Table 5, showing percentage decreases in the tuberculosis rate by age-sex since 1922, would be aided greatly by a graph.

A. W. HEDRICH

Children's Dentistry in Honolulu: Report of Palama Settlement Dental Clinic for School Children, 1934—*By Mervyn I. Conner, D.D.S., Dental Director.* 24 pp.

Dental service at Palama Settlement, Honolulu, is reported for 1934 by Mervyn I. Conner, D.D.S., Dental Director.

Forty-nine per cent of the pupils in the first 5 grades were deemed eligible by the dental hygienists for clinic service. The fees paid by the children amount to 4 or 5 per cent of the cost of the service. The clinic is supported by the "Strong Foundation." The service clinic in coöperation with the public school staff of dental hygienists succeeded in securing dental care for 85 per cent of the pupils attending the first 5 grades. The remaining 15 per cent were not cared for but are accounted for in the report. This is probably as complete a service as can be obtained at reasonable expense and is entirely satisfactory from the public health viewpoint. The clinic cared for 7,444 at an annual cost of $4.71 per pupil in 1934.

Since 1920, this institution has steadily progressed in service to the community. May it continue.

HARRIS R. C. WILSON

Survey of the Ohio State Department of Health, 1935.

A survey of the Ohio State Department of Health has recently been completed, as part of the Ohio Government Survey, initiated by the Governor, Martin L. Davey.

The report on the Department of Health was prepared by the following committee: Dr. J. A. Doull, Western Reserve University, *chairman;* Howard Whipple Green, Cleveland Health Council, *secretary;* George Gascoigne, consulting engineer, Cleveland; Miss Marion G. Howell, Dean School of Nursing, Western Reserve University, Cleveland; and Dr. A. Graeme Mitchell, University of Cincinnati. The Committee was assisted by Miss Pearl McIver, U. S. Public Health Service, who surveyed the Nursing Division; A. W. Hedrich, Sc.D., Johns Hopkins University, who surveyed the Vital Statistics Division; and Mr. A. A. Keiser, of the National Cash Register Co.

A historical sketch outlines the creation of the Board of Health in 1886, and the gradual development of administrative divisions; the reorganization in 1917 into a State Department of Health, headed by a Public Health Council and a Health Commissioner selected by them to serve a five-year term; and another re-organization in 1921, whereby the Health Commissioner was replaced by a Director of Health, appointed by, and serving at the pleasure of, the Governor. In the same re-organization, vital statistics functions were transferred from the office of the Secretary of State to the Department of Health. The Commissionership has changed hands frequently in recent decades, but the Assistant Commissioner has been in office nearly forty years.

There are, at present, six Divisions of the Department: Administration, Communicable Disease (including Bureaus of Venereal Disease, Tuberculosis, and Blindness Prevention), Vital Statistics, Laboratories, Hygiene (including Bureaus of Occupational Disease, Child Hygiene, Maternity Hospitals, and Dental Hygiene), and Sanitary Engineering.

As has occurred in other states, the Department suffered a severe reduction in appropriations, illustrated by the following comparison of expenditures in 1930, the peak year, and in 1934:

Year	*Total Expenditures*	*Subsidies to Local Depts.*	*Personnel Services*	*Maintenance*
1930	$630,560	$251,098	$276,561	$102,901
1934	378,048	150,000	178,486	49,561

It is seen that the total expenditures declined by 40 per cent, subsidies to local health departments the same proportion, personnel services 35 per cent, and maintenance, 52 per cent. Personnel was cut from 137 persons to 92: the nursing staff was cut from 14 persons to 3: and there were dropped 8 stenographers, 5 chemists, and 4 physicians, along with other personnel.

The Committee found that, on the whole, the Department was efficiently and economically conducted. For example, the laboratory cost of performing the conventional double test for syphilis was approximately 21 cents; at commercial rates the cost would have exceeded the entire budget of the Health Department. The central office expense for registering births and deaths (not including county fees to local registrars) was about 15 cents per certificate, compared with a cost of registering animals in appropriate registeries of $1 to $3 for hogs and sheep, to as high as $4 to $20 for horses. Accordingly, whereas further cuts in budget aggregating five millions were recommended by committees for other departments of the government, the Committee on Public Health felt obliged to recommend increases for the Department of Health proper, as follows: salaries and wages, $16,260; maintenance, $1,851. It was, however, recommended that subsidies to local departments be reduced from $150,000 to $125,000.

Perhaps the most important recommendation of the Committee was that, subject to approval of the Public Health Council, the Director of Health be given a free hand in the allocation of local subsidies, according to the needs of local communities. This policy would enable him to promote the consolidation of health districts and in other ways stimulate efficiency and economy. This, and other recommendations are in harmony with those made by Dr. Joseph W. Mountin in a Report of the Governor's Commission on County Government, submitted in December, 1934.

Among other recommendations are:

That the term of the Director of Health be made indeterminate; that he shall be subject to removal only for incompetency, misbehavior, or age limitation; and that appointment and removal by the Governor be subject to approval of the Public Health Council; retention of the present Director is recommended;

That the "exemption privilege," permitting an incoming Director arbitrarily to remove three employees from the classified list, be abolished;

That a second Assistant Director of Health be appointed; the first Assistant would then have charge of administrative activities, such as personnel, legislative, purchasing, and publicity; the second Assistant would have charge of local health organization and preventive medicine activities. Divisions reporting directly to the Commissioner would be Vital Statistics, Laboratories, and Sanitary Engineering;

That additional personnel be provided, including an epidemiologist at $3,600, a dental health officer at $3,600, a nursing supervisor at $2,500 to $3,000, and three public health nurses, aggregating $5,400;

That a new state laboratory be constructed, and that the Division undertake histo-pathological and toxicological examinations; and

That the food and dairy activities of the Department of Agriculture and inspection of hotels and restaurants by the Fire Marshall be transferred to the Health Department.

Recommendations were made to individual Divisions concerning procedures, for example, the use of labor saving machinery, elimination of duplications, speeding up of certain operations, and the like. A. W. HEDRICH

A New Angle on Health (Nature's Provision for the Health and Happiness of Mankind) — *By Surgeon Captain D. H. C. Given, M.D. London: John Bale, Sons & Danielsson, Ltd.*, 1935. 160 pp. Price 7s. 6d.

This book is a sincerely written essay, containing much that is of interest. The author attributes much evil to modern industrialism and the consideration of "self before service." He holds that "Nature is merely the kingdom of God upon earth," and that "Nature's simple recipe for health and happiness inevitably brings one back to the Sermon on the Mount." He concludes by expressing his conviction that "the precepts of Christianity are the only basis of a healthy and happy life."

The book has a number of interesting charts, tables, and illustrations. The printing and make-up are excellent.

We believe that it is better suited as a religious tract than as an essay on hygiene. MAZŸCK P. RAVENEL

Making Our Minds Behave—*By William S. Walsh, M.D. New York: Dutton*, 1935. 277 pp. Price, $2.50.

Having been favorably "conditioned" by the sympathetic, approving, and even enthusiastic reviews of this author's books he has seen in the newspapers in the past, this reviewer picked up the present work (the first he has read) with confidence and expectation that here he would find a satisfactory exposition and interpretation of mental hygiene principles and their practical application to everyday life, but he was soon disappointed. It starts off promisingly with an instructive discussion of the relations of emotion to mind, of mental mechanisms like rationalization, of the inferiority complex, of ego and sex drives and one or two other psychobiological fundamentals, but after the first two or three chapters this mental hygiene content peters out and the book trails off into the popularized, inspirational treatment of "psychological principles" with which we are all familiar.

It can hardly be said to be, as the publishers call it, "a study of psychology and psychoanalysis." Except for this limited presentation of some of the concepts of the new psychologies, the contemporary setting of many of the illustrations and object lessons, and the use of current idiom, the book might have been written twenty years ago.

One wonders what the secret of success of this author is, unless it be his marked ability to talk to his readers in easy, American vernacular, and to supply them with a type of psychological material for which there is apparently still great demand, for he knows what they want and what to give them and how. He writes clearly, simply and interestingly, and tells them much that is sound, sane and sensible, though also much that is trite and even banal.

It is a little disappointing that a physician, who is also a serious student of human behavior and the social sciences, with a gift for popularization that could be turned to good account in the manipulation of sterner stuff, should devote the major part of a work on the science and art of mental hygiene to such shop-worn topics as the art of concentration, self-expression, personal popularity, second-hand thinking, "mental engineering," and "making good on the job." Dr. Walsh might have left to the vocational psychologist and the efficiency experts, for example, the business of advising the young graduate from high school or college how to apply for a job.

There is great need for mental hygiene literature of the self-help type for the laymen. There is already a

large and growing literature for the parent and teacher with reference to the training of the young, but little as yet of a sound and practical nature for the adult himself. It is a paradox that the more successful of our popular books on psychology should be so thin and unsubstantial, and the solid and more valuable material of mental hygiene, educationally speaking, so poorly prepared for popular consumption, when it is available at all.

PAUL O. KOMORA

Child Nutrition on a Low-Priced Diet—*By Mary Swartz Rose and Gertrude M. Borgeson. New York: Bureau of Publications, Teachers College, Columbia University,* 1935. 109 pp. Price, Paper, $1.00; Cloth, $1.50.

In this monograph of the Child Development Series the authors have described fully, and clearly, the results of an intensive study of certain phases of nutrition in a group of 60 preschool children maintained on a uniform low priced diet for 21 months, and 19 of the children subsequently kept on the some diet for 10 months longer. The study was carried out as a coöperative research project of the Child Development Institute, various departments of the College and University and of a social welfare organization.

The children were under Day Nursery supervision and were divided for purposes of study, into two groups matched as nearly as possible as to age and sex. The diet of one group was supplemented by an egg a day for each child. Careful supervision by a nutritionist and physician was maintained throughout.

The principal conclusions are as follows:

1. The uniformity of the health progress of the two groups.
2. The efficiency of a very inexpensive diet for young children if chosen with knowledge of nutritive values, and administered with due regard for ease of digestion and regularity of food consumption.
3. Milk furnished on the average 36 per cent of the total calories.
4. The total cost of the diet without eggs averaged about 1.6 cents per 100 calories.
5. The differences in growth of egg and no-egg groups were not significant with respect to either height or weight.
6. No differences in growth, general health status, or hemoglobin and red cell values of the blood could be attributed to the added orange juice.
7. No special benefit from the substitution of liver for egg could be detected.

This work merits careful consideration and should be read by all those interested in child development.

One would like to see similar studies carried on for preschool children in other parts of the country, as reports have been coming in that this age group has suffered more severely during the depression than any other.

RICHARD A. BOLT

Health Dentistry for the Community by the Committee on Community Dental Service of the New York Tuberculosis and Health Association — *Edited by Michael M. Davis. Chicago: University of Chicago Press,* 1935. 85 pp. Price, $1.00.

This volume brings together much valuable information as to what is being done for both children and adults in the matter of dental service for the financially less fortunate. The various problems are discussed freely and frankly. It will be found most readable and enlightening if not entirely pleasing to the conservative mind. Some suggestions are made for the solution of dental problems for all the people.

This volume will be of value to any committee or group planning for community dental service.

HARRIS R. C. WILSON

A Square Deal for the Narcotic Addict—*By William H. Ladue, M.D. Published by the author. Plattsburgh, N. Y.: The Tuttle Printing Office,* 1935. 131 pp. Price $1.00.

This book is chiefly a discussion of narcotic addiction, on which a large amount of good material is given. The object of the author is to compare drug addiction and the hysteria which it has engendered with alcoholism and our complacent attitude toward it. In one chapter called "A Double Standard," he discusses the marked discrepancy between the social significance of alcoholism and drug addiction, and holds that the public conscience acts as though aroused to the higher degree by the lesser irritant. The author holds that drug addiction is not a menace; that there is not an "institution, a vital component of our life as a nation, that is tottering because of narcotics." There is no association comparable to the W.C.T.U. or the Anti-Saloon League to educate the public and fight the use of narcotics. There is no church standing at bay.

Narcotic addiction has been decreasing since about 1900, and this warrants a further trial of educational processes against it. Our attitude toward addiction is wrong, and the compulsory commitment of addicts is one of the most flagrant examples of the relative disregard of personal rights.

The writer disclaims any intention to advocate total relaxation of narcotic control or cessation of commitment, confinement, or punishment of selected addicts who have become a social problem. He holds strongly, however, to the idea that compared with the great alcoholic problem, narcotic addiction has nothing like the importance which has been given to it in the federal laws as well as those of the various states.

The book ends with an appendix which gives a Digest of Essential Features Required in a State Narcotic Defense Law, proposed by the International Narcotic Education Association. The author makes out a strong case, and his book is well worth reading.

MAZŸCK P. RAVENEL

Common Sense for Mothers—*By Mrs. John S. Reilly. New York: Funk & Wagnalls,* 1935. 372 pp. Price, $2.00.

The author, a mother of seven children, has tried in this book to give to other mothers the results of personal experiences and observations in the rearing of her family. Her counsel is wise and seasoned with a fine sense of humor. The material is well presented.

The author brings out that childbirth is a natural, normal function of woman; although attended by dangers which may be modified by early physical examination and supervision of a capable physician.

Mrs. Reilly places upon the mother a big responsibility for the care and character formation of her children. She feels that in order to do this job successfully, the mother must have good judgment and common sense. She says that housekeeping and the feeding of children has become almost a science; but the training of children is a much neglected field. Mothers have been expected to do this training without preparation. Wise parenthood requires more than good will and traditional ideas.

Adolescence is discussed as the age of transition. Some of the difficulties which confront parents at this time are mentioned.

The material organized in Mrs. Reilly's book is not new; but her method of presentation is somewhat different from other books in the same field, because she has lived in close association with her own family.

ELLEN D. NICELY

The Single Woman: A Medical Study in Sex Education—*By Robert Latou Dickinson and Lura Beam. Baltimore: Williams and Wilkins,* 1934. 469 pp. Price, $5.00.

This book is one of the series in Medical Aspects of Human Fertility issued by the National Committee on Maternal Health and follows the authors' "A Thousand Marriages," published in 1932. The material for it is taken from the same sources, *i.e.*, patients seen in private practice by Dr. Dickinson during the forty years from 1890 to 1930. The point of view is not the narrow one of the specialist, whom the sceptic may accuse of finding what he is looking for, but that of "the family doctor plus the anatomist plus the specialist in the diseases of women." For this reason the book is a social as well as a medical document, and raises more questions than it answers. The single woman has sexual problems, but so does the married woman, and often they are not so different in their actual essence. Frustrated in its normal biological functioning, sexual energy seeks other channels of expression. What direction it takes, whether it remains at the level of physical expression or seeks other outlets, in "work, the arts, religion, family or other people," it is the entire personality of the woman that is involved, and not her sexual nature in the narrow sense. Sexual behavior is thus more of a psychological and social phenomenon than a strictly biological one, and can best be studied in relation to the social and economic currents of a particular epoch. It becomes, too, of paramount concern to education; "sexual illiteracy is costly."

No one in this country is better qualified to speak on such a subject than Dr. Dickinson. The material of the case histories has been skillfully handled, the conclusions are sane and logical, and the book as a whole is an invaluable contribution to the literature of sex. WINIFRED RICHMOND

Nutrition Work with Children—*By Lydia J. Roberts (rev. ed.). Chicago: University of Chicago Press,* 1935. 639 pp. Price, $4.00.

Those who have had Miss Roberts' 1st edition of *Nutrition Work with Children* on their shelves as a standard reference for 9 years will welcome this completely revised and considerably enlarged new edition. The present volume reveals an omnivorous appetite for keeping abreast of modern developments in nutrition and a digestive facility in reducing them to 639 pages. The results of modern nutritional research are presented clearly in a manner easily understood even by the uninitiated.

Each chapter is followed by a helpful list of references to original material. The clarity with which the author discusses the difficulties in assessing nutrition is refreshing. The chapters on the causes of malnutrition and the physical and mental effects of undernutrition are written especially well.

However, Miss Roberts has more than an academic interest in malnutrition. More than half of the book is given over to prevention and treatment. The various agencies which may be enlisted are described. The responsibility of the school for the health of its children is stressed, and a practical health program is outlined. The need for nutrition work in the preschool period is recognized.

"There can be no doubt," says Miss Roberts, "that an effective program of school and community betterment must begin back in the preschool period."

The format of the book is excellent, and the well chosen illustrations add considerably to its value.

RICHARD A. BOLT

Biology for Everyman—*By Sir J. Arthur Thomson. New York: Dutton,* 1935. 2 vols. 1,600 pp. Price, $5.00.

The last fifteen years have seen quite a number of good, bad, and hack volumes on humanized knowledge. At times it was sufficient for a scribe with a flair for popular writing to read a number of books on a subject in order to produce a so-called outline. Of course, many of the outlines have not only imparted a great deal of accurate information, but have stimulated large masses to take a more intelligent interest in scientific, literary, and religious subjects. Thus, we had such works as the forerunner of all outlines, that of H. G. Wells on history, which must have had a tremendous influence on the entire field of adult education. Of this "Outline of History" the late Arnold Bennett was wont to say that the very conception on the part of the author was highly daring and the actual execution of the design was of course even greater.

The present work may not be exactly an outline, but whatever its name, it was something very much worth doing and few were better qualified for the task than the author of these two volumes. Sir J. Arthur Thomson, besides being a truly great biologist, brought to his task thirty years' experience, both as a teacher and writer, of natural history. Moreover, he always wrote so well that it is a real enjoyment to read what he had to say.

In "Biology for Everyman" the author gives us in 1,600 pages a vivid picture of living things, from amoeba to man; the plant world, heredity, sex and evolution are described and oriented with the rest. He does it with real charm and without the technicalities of the formal text books. The main sections of the work are divided into systematic sub-sections for the benefit of students, so that it may serve as a reference or enlightened text book. There are also a good many subject references and cross references, 500 fine illustrations, and a valuable index of more than 80 pages. The job of seeing the manuscript through the press was done by Dr. E. J. Holmyard, scientific editor of "Everyman's Encyclopedia." Altogether, a fascinating work which will be read with interest, profit, and pleasure, especially by the lay reader. SAVEL ZIMAND

Modern Motherhood—*By Claude Edwin Heaton, M.D., F.A.C.S. New York: Farrar and Rinehart,* 1935. 271 pp. Price, $2.00.

Dr. Heaton has given us a comprehensive book for mothers and prospective mothers presented in a direct, clear-cut style. It is thoroughly up-to-date in answering frankly every question a modern, intelligent woman is liable to ask. Even "The Expectant Father" is recognized as an important adjunct to modern motherhood. A unique feature of the book is the last section devoted to "Obtaining Adequate Maternity Care." In this is discussed the choosing of a doctor and a hospital, and the crucial question of the cost of maternity care. There is a very instructive chapter on the evolution of obstetrical care and a concluding chapter on "American Obstetrics" in which community responsibility is stressed. "Plainly a large majority of American parents," says Dr. Heaton, "belong to classes in need of a new deal in obstetrics."

"To recapitulate the main thesis of this book: the problem of maternal welfare in the United States is primarily a social and an economic one. Expectant parents who are able to avail themselves of the advantages of modern obstetrics may contemplate having a baby with serenity and confidence." A helpful bibliography and glossary are appended. RICHARD A. BOLT

Annual Report of Division of Sanitary Engineering—Georgia Department of Public Health, 1934—*Malaria Control*, pp. 18–25, inclusive.

A narrative report with tabulation of work accomplished on drainage, and employment figures, by counties.

The report of an organization aggressively engaged in the promotion, planning and supervision of work relief labor on drainage operations, rather than in conventional health department engineering functions of approving plans and specifications. The first section deals with a narrative of work operation and description of the administrative organization. It concedes that much of the work involved conflicts with professional malaria control principles, due to extreme limitations and restrictions on public health personnel in proportion to the magnitude of the program, and to characteristic defects and restrictions of CWA and ERA program conditions primarily governed by the furnishing of minimum aid to relief cases. In spite of deficiencies, the program is endorsed and praised as having provided great benefit to numerous individual areas.

Detailed description of the duties and functions of field personnel on malaria drainage is given. Detailed description of program and project difficulties involved in the operation of work relief labor is given. Labor forces employed were almost exclusively provided by relief agencies, although this state has a prior history of malaria drainage by convicts. Work was accomplished in 110 counties, 2,500 ponds were drained, and 6,000,000 man hours of employment were devoted to the program.

The second section deals with malaria prevalence and epidemiological factors. This discussion recognizes rainfall as the principal determinant of malaria prevalency. The "Number of deaths per inch of rainfall" is computed for comparative purposes in the study of other epidemiological factors, and in evaluating state-wide effectiveness of control. Little consideration is given to total malaria deaths in the state, which it is demonstrated will fluctuate very widely in crude relation to the rainfall, irrespective of all other factors.

A normal expectancy of 8.62 deaths from malaria per inch of rainfall is established by records over a 15 year period. Death rates in excess of this normal expectancy furnish indications of variation in disease virulency, type of disease, changes in the human host, and in the failure of control measures. Rates below the normal occurrency are counter indicative.

The effectiveness of drainage in influencing the state-wide problem as well as restricted local conditions is demonstrated by a declining trend curve, and also by rate curve characteristics for 1934 which show a below normal occurrence in spite of an expected 7 year cyclic increase and by nation-wide statistics of the U. S. Public Health Service.

Secondary curves published show a lag in the up-turn of malaria deaths with increasing rainfall after the end of drought periods (see 1926 and 1932). This is attributed to the accumulated deficiency of pond storage waters, requiring extensive replenishing before marked expansion in anopheles breeding occurs, and to the reduction of carriers. Sustained increase in precipitation resulted in the accelerated increases of malaria deaths occurring immediately after the period of lag.

The relative value of malaria morbidity and mortality reporting is discussed.

Malaria control by mass drug treatment, and thick blood smear surveys are under way in the state, but are not discussed in the engineering report.

JOHN M. HENDERSON

Methods and Materials of Health Education—*By Jesse Feiring Williams, M.D., and Fannie B. Shaw, M.A. New York: Nelson,* 1935. 331 pp. Price, $1.65.

This book runs the gamut of school health education, discussing such erudite subjects as environmental sanitation, or "healthful school living," health service, and health instruction. In addition, there are chapters on the nature of the child, the construction of the curriculum, tests and measurements in health education, materials for teaching health, and the rôle of various organizations in the now highly developed art and science of health education. As a fitting climax, the health of the teacher receives ardent attention.

Although somewhat pedantic in tone, this well printed book is a valuable contribution to the literature on an important branch of public health. It should prove of practical value to all persons engaged in school health education and deserves wide use for that significant purpose. JAMES A. TOBEY

Bacteriology for Nurses—*By M. A. Smeeton, B.Sc., M.A. (4th ed.) New York: Macmillan,* 1935. 352 pp. Price, $2.50.

This is the fourth edition of a concise and comprehensive text. In this revision of the book current nomenclature has been introduced; and new subject matter incorporated which is in accord with the results of recent research.

The classification of Prevalent Communicable Diseases, added to Chapter X, furnished a useful summary of information as to the infective agent, source of infection, and period of infectivity. However, the methods of control—as listed in this classification are too brief and generalized to provide much information for the student.

One of the weakest features of the book is the lack of a bibliography or list of reference readings.

The illustrations are greatly improved, clearly labeled, and well chosen.

Appendix I, dealing with the classification of bacteria is an especially good feature of the book and serves to make more complete a very acceptable text in bacteriology for nurses.

MARY C. EDGAR

Introduction to Psychology. *With Special Applications to Nursing and Nursing Interrelationships, 1910–1913—By Edward S. Robinson and Virginia Kirk. New York: Macmillan,* 1935. 368 pp. Price, $2.50.

This is no ordinary book on psychology. It contains special applications to nursing and nursing problems.

Praise be, too, it doesn't plunge one immediately, like some of the older texts on the subject, into the intricate anatomy of the nervous system. It is practical and actually interesting.

In the chapter on memory we begin to understand these wordy individuals who dwell on all the inconsequential details when telling a story. The trouble with them is that they do not distinguish between what is significant and what is not, and lose the point of the story; as the author states "they get just as excited over a broken chair as they would over a broken leg."

The material is beautifully arranged, with good paragraph headings and plenty of illustrations. Each chapter is summarized and ends up with a set of problems that are real nut crackers —also with good references for further study.

Nurses are feeling more and more the need to study mental hygiene. A text like this is an essential preliminary to that study. And with the growing emphasis on more university education for nurses—here is a book of real college caliber for them.

EVA F. MACDOUGALL

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

About **Alcohol and Tobacco**—Why do people smoke and drink? What probable harm do these poisons do? These questions are not answered, but the attempt to do so reaches the usual standard of the unusual magazine which studied the question.

ANON. Alcohol and Tobacco. Fortune, 12, 3:67 (Sept.), 1935.

Scarlet **Fever among Nurses**—In a large group of nurses, the attack rate among those persons susceptible to scarlet fever was 12.8 per cent, whereas among the Dick negative and the immunized groups the attack rate was 0.7 per cent.

ANDERSON, G. W., and REINHARDT, W. I. Scarlet Fever Immunization of Nurses. J. Infect. Dis. 57, 2:136 (Sept.-Oct.), 1935.

A Britton **Looks at Food Standardization**—Calling for a committee to set up standards for certain food products, the author warns against the possibility of raising the price of the standardized foods above the pocketbooks of the poor. He would rather see the poor have plenty of wholesome but so-called second-class foods than too little first-class articles which, while excellent esthetically, would not be nutritionally superior.

BROWN, R. K. Standardization of Food. J. State Med. 43, 9:513 (Sept.), 1935.

Heart Disease Causes—Rheumatism was the commonest cause of heart disease, exclusive of the arteriosclerotic-hypertensive types, and syphilis next among the heart disease deaths under review.

HEDLEY, O. F. A Study of 450 Fatal Cases of Heart Disease Occurring in Washington (D. C.) Hospitals during 1932 with Special Reference to Etiology, Race and Sex. Pub. Health Rep. 50, 34:1127 (Aug. 23), 1935.

Convalescent Serum against Scarlet Fever—Immune scarlet fever serum will prevent infection in contacts in 95 per cent of the cases; where protection is not complete the disease is modified; it will abort the disease if given early; even if late, it seemed beneficial; no ill effects were experienced.

HOYNE, A. L., *et al.* Convalescent Scarlet Fever Serum. J.A.M.A. 105, 10:783 (Sept. 7), 1935.

For the Prevention of Measles—Convalescent serum is still the best prophylactic agent against measles, in the author's opinion. Adult blood is effective, as is placental globulin, though the reaction to the latter may be severe.

KARELITZ, S. Measles Prophylaxis. New York State J. Med. 35, 17:876 (Sept. 1), 1935.

Plague in the West—Plague, concludes this article, is a permanent problem on the Pacific Coast and probably will appear in other states. Especially to be feared is the pneumonic form which may be related to the disease in squirrels, ground hogs, and related species.

KELLOGG, W. H. Rodent Plague of California. J.A.M.A. 105, 11:856 (Sept. 14), 1935.

Preventing Pertussis—Convalescent serum was found of prophylactic value in whooping cough but of doubtful benefit in treatment. A useful skin test is proposed.

PATERSON, D., *et al.* Control of Whooping Cough with Serum and Vaccine. Lancet, 2, 7:361 (Aug. 17), 1935.

Nursing and V. D. Control—Stressing the importance of case find-

ing and follow-up in the control of gonorrhea and syphilis, the author develops the great possibilities of public health nursing contributions to the cause.

NELSON, N. A. The Prevention and Control of Gonorrhea and Syphilis. Pub. Health Nurs. 27, 9:463 (Sept.), 1935.

Industrial Hygiene High Spots—Typically British is this philosophical discussion of the health of industrial workers. Most American papers would be more readable were they written with the broader vision of our overseas cousins.

OLIVER, T. Side Lights upon the Health of Workers and Their Occupations. J. State Med. 43, 9:497 (Sept.), 1935.

Psychology and the Nursling—That you can lead a baby to milk but you can't make him drink seems to be one of the arresting ideas in this stimulating paper on infant nutrition, which ought to be taken to heart by all who have to do with babies.

POWERS, G. F. Infant Feeding. J.A.M.A. 105, 10:754 (Sept. 7), 1935.

In the Baby's Bottle—Buffered lactic acid milk is good for new-born infants. They should experience less initial loss of weight and do better afterward. It is good for premature and debilitated infants, too.

SMYTH, F. S., and HURWITZ, S. Buffered Lactic Acid Evaporated Milk in Infant Feeding. J.A.M.A. 105, 10:789 (Sept. 7), 1935.

More about Dr. Topley's Famous Mice—Under experimental conditions, the long continued daily addition of susceptible mice to an infected herd finally reaches a state of epidemic equilibrium in which deaths are constant. Periodicities in natural epidemics must be due to variations in factors kept constant in the experimental environment. Adding immunized entrants lowered the death rate to mouse typhoid, but did not wipe out the epidemic. Conclusions regarding relationships in the diseases of mice and men are stimulating.

TOPLEY, W. W. C. Some Aspects of Herd Immunity. J. Roy. San. Inst. 41, 3:123 (Sept.), 1935.

BOOKS RECEIVED

FREE MEDICAL CARE (SOCIALIZED MEDICINE). By E. C. Buehler. New York: Noble & Noble, 1935. 360 pp. Price, $2.00.

HEALTH STORIES. Book III. By Anna B. Towse, Florence E. Mathews and William S. Gray. Chicago: Scott, Foresman & Co., 1935. 208 pp. Price, $.76.

NATIONAL PUBLIC WORKS. Addendum. Geneva: League of Nations, 1935. 226 pp. Price, $2.00.

ABNORMAL ARTERIAL TENSION. By Edward J. Stieglitz. New York: National Medical Book Co., 1935. 261 pp. Price, $3.00.

DISEASES OF THE CHEST. By J. Arthur Myers. New York: National Medical Book Co., 1935. 385 pp. Price, $3.00.

COMMONER DISEASES OF THE SKIN. By S. William Becker. New York: National Medical Book Co., 1935. 283 pp. Price, $3.00.

PEDIATRIC TREATMENT. By Philip S. Potter. New York: Macmillan, 1935. 578 pp. Price, $5.00.

INDUSTRIAL MEDICINE. By W. Irving Clark and Philip Drinker. New York: National Medical Book Co., 1935. 262 pp. Price, $3.00.

THE PATIENT'S DILEMMA. By S. A. Tannenbaum and Paul Maerker Branden. New York: Coward-McCann, 1935. 278 pp. Price, $2.50.

THE STORY OF MEDICINE IN THE MIDDLE AGES. By David Riesman, M.D. New York: Hoeber, 1935. 402 pp. Price, $5.00.

AGENTS OF DISEASE AND HOST RESISTANCE: INCLUDING THE PRINCIPLES OF IMMUNOLOGY, BACTERIOLOGY, MYCOLOGY, PROTOZOÖLOGY, PARASITOLOGY AND VIRUS DISEASES. By Frederick P. Gay and Associates. Springfield, Ill., and Baltimore, Md.: Charles C. Thomas, 1935. 1,582 pp. Price, $10.00.

SURVEY REPORT OF THE CINCINNATI PUBLIC SCHOOLS. By the United States Office of Education. Copies available from the Board of Education, Cincinnati, Ohio, at $1.50 (plus postage).

ASSOCIATION NEWS

OFFICERS, 1935–1936

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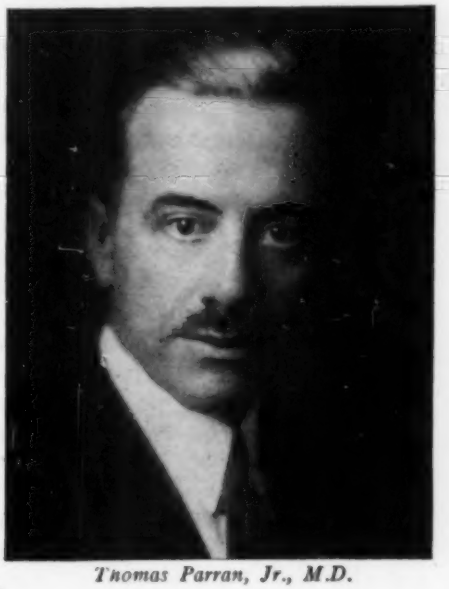
THE NEXT ANNUAL MEETING WILL BE HELD IN NEW ORLEANS, LA.

WALTER H. BROWN, M.D., PRESIDENT
THOMAS PARRAN, JR., M.D., PRESIDENT-ELECT

AT the Sixty-fourth Annual Meeting in Milwaukee, Wis., Eugene L. Bishop, M.D., retired from the office of President of the American Public Health Association and Walter H. Brown, M.D., of Stanford University, Palo Alto, Calif., became President to serve for the year 1935–1936. Dr. Brown is well known in Association circles, having served in numerous

Walter H. Brown, M.D.



Thomas Parran, Jr., M.D.

capacities—most recently as President of the Western Branch of the A.P.H.A. Dr. Brown is a graduate of Jefferson Medical College, Philadelphia, and practised medicine in Pennsylvania for several years prior to his graduation from the Harvard-M.I.T. School for Health Officers in 1914. He served as Epidemiologist of the Massachusetts State Department of Public Health; as Health Officer of Bridgeport, Conn.; as Associate Director of Health Service of the American Red Cross; and was assigned to the Commission for Prevention of Tuberculosis in France by the Rockefeller Foundation at the close of the war. Later Dr. Brown became the Director of the Child Health Demonstration in Mansfield, Ohio, and subsequently was Director of the Child Health Demonstration in Marion County, Ore. Since 1927, Dr. Brown has been Professor of Hygiene at Leland Stanford University. He has been a member of the A.P.H.A. since 1915 and a Fellow since 1922.

The new President-Elect is Thomas Parran, Jr., M.D., Commissioner of Health of New York State. Dr. Parran, who is a graduate in medicine of Georgetown University, has been identified with the U. S. Public Health Service since 1917. Among various assignments he has served as Chief Medical Officer of Muscle Shoals, Ala.; Executive Officer of the Medical Division of the War Risk Insurance Bureau; Director of the Tri-State Sanitary District; Director of Rural Sanitation in the Missouri State Department of Health, and in a similar capacity in Illinois. In 1925, Dr. Parran was made Chief of the Division of Venereal Diseases in the Public Health Service with the rank of Assistant Surgeon General, where he served until his appointment in 1930 by Franklin D. Roosevelt, then Governor, as Commissioner of Health in New York State. Dr. Parran is a member of the Committee on Research in Syphilis. He has served as Treasurer of the Association for 2 years, and since 1933 has been Chairman of the Executive Board, which brings to him a valuable familiarity with the current affairs of the Association.

Dr. Parran has been a member of the A.P.H.A. since 1919, and a Fellow since 1923.

THE SEDGWICK MEMORIAL MEDAL

AT the Milwaukee meeting the Sedgwick Memorial Medal for distinguished service in public health was awarded to Haven Emerson, M.D., of the College of Physicians and Surgeons, Columbia University, New York.

Dr. Emerson is well known to the Association, having served as President 1933–1934. He is a graduate of the College of Physicians and Surgeons in New York, class of 1899. He was Commissioner of Health of New York City 1915–1917 and has had teaching connections with Cornell University and the New York School of Social Work besides his present connection as Professor of Public Health Administration at Columbia, where he has been since 1922. Dr. Emerson was a Colonel in the U. S. Army during the World War and is now a member of the National Advisory Health Council of the U. S. Public Health Service.

Among other awards which Dr. Emerson has received have been the Distinguished Service Medal, the Medaille des Epidemies, and the Chevalier Legion d'Honneur (France).

The Sedgwick Memorial Medal was presented by William H. Park, M.D., of New York, himself a recipient of the

medal in 1932. Dr. Park paid a fitting tribute to the memory of Professor Sedgwick, and spoke of the eminent qualifications of Dr. Emerson for this honor.

Replying to the presentation, Dr. Emerson said:

"In accepting this token from your hands, Dr. Park, I recognize the occasion as one when friends and disciples delight to do honor to the memory of a great teacher.

"Someone, each year, is chosen to serve as a sort of proxy, and I appreciate the temporary privilege of playing a part in reënacting the annual tribute of admiration for the character and life work of William Thompson Sedgwick.

"He most happily personified that rare but indispensable individual, whom Matthew Arnold so handsomely described:

> The great men of culture are those who have had a passion for diffusing, for making prevail, for carrying from one end of society to the other the best knowledge, the best ideas of their time; who have labored to divest knowledge of all that was harsh, uncouth, difficult, abstract, professional, exclusive; to humanize it, to make it outside the clique of the cultivated and the learned, yet still remaining the best knowledge and thought of the time.

"Professor Sedgwick was such a great man of culture.

"This precious golden disk I shall keep before me, in the hope that by good fortune and hard work I may do something for the students of today, which will make them as useful in our society as are everywhere the students of Sedgwick."

Previous recipients of the Sedgwick Memorial Medal were:

1929 Charles V. Chapin, M.D.
1930 Theobald Smith, M.D.
1931 George W. McCoy, M.D.
1932 William H. Park, M.D.
1933 Milton J. Rosenau, M.D.
1934 Prof. Edwin O. Jordan

The Chairman of the Committee on Award of the Medal for 1935 was Surgeon-General Hugh S. Cumming, of Washington. Beginning in 1936, the Committee of Award will consist of the five most recent recipients of the Medal.

LEGITIMACY RECORDS ON BIRTH CERTIFICATES

AT the Milwaukee Annual Meeting the Section on Vital Statistics passed unanimously a resolution looking toward the removal from all birth records of statements of legitimacy. It was stated that about 50,000 babies are acknowledged as born out of wedlock each year in the United States and that the true number was closer to 100,000. These birth records are recognized as being no better than casual statements of purported fact, and are of course subject to the usual tests of evidence. The stigma involved for the child is so great that the social usefulness of these reports is open to serious question.

"In pursuance of the recommendation of the Committee, the Vital Statistics section unanimously resolved that the committee should take steps leading toward the elimination from official birth records of all references to legitimacy of the child.

"It was the further sense of the section that the future work of the committee should be guided by the concept that no child in America should be denied the equality and the complete freedom to pursue happiness, which, in the words of the Declaration of Independence, are the inalienable rights of all men."

The Chairman of this committee, J. V. DePorte, M.D., of the New York State Department of Health, said:

"At present a child born out of wedlock is stigmatized for life. In

recent years the injustice of penalizing a child whose parents were not married has come to be recognized; hence the increasing acceptance of the viewpoint that there may be illegitimate parents, but there can be no illegitimate children."

Thomas Parran, Jr., M.D., New York State Health Commissioner, endorsed this action of the section and stated that plans have been made to make effective this recommendation through legislative action in New York State sponsored by Governor Lehman.

This Section action was considered by the Governing Council of the American Public Health Association and approved for publication as representing the attitude of the Association. It has received wide newspaper attention and the section officers have suggested that the time may now be ripe in many states for definitive action.

CHANGES IN THE BY-LAWS MADE AT THE ANNUAL MEETING

ON the recommendation of the Association Committee on Constitution and By-Laws, composed of Henry F. Vaughan, Dr.P.H., *Chairman;* Haven Emerson, M.D., and John A. Ferrell, M.D., the Governing Council at Milwaukee adopted two changes in the By-Laws which will be of interest to the membership.

Having in mind the desire to broaden the group of persons who carry important Association responsibilities, it was decided that hereafter those Fellows who were elected to and who accepted membership upon the Executive Board should be ineligible for membership on any of the Standing Committees of the Association. This provision will serve an additional purpose of making the Executive Board a more judicial agency in passing upon the budgetary requests of Standing Committees than would be possible were the members of the Standing Committees members also of the Executive Board. The new By-Law provides that those members of the Executive Board who were serving at the close of the Milwaukee session would have their choice of continuing with the Executive Board or continuing with the Standing Committee.

The new Executive Board, which consists of the President, the President-elect, the Treasurer, and 6 other Fellows of the Association, includes 3 new members, Dr. J. N. Baker of Alabama, Dr. John P. Koehler of Milwaukee, Friend Lee Mickle of Connecticut, in addition to Dr. John L. Rice of New York, and Dr. Huntington Williams of Baltimore who were reëlected. Dr. John A. Ferrell of New York has been elected Chairman of the Executive Board for one year. The vacancies on Standing Committees occasioned by this new By-Law will be filled at the December meeting of the Executive Board on recommendations submitted by the Chairmen of the Standing Committees.

Another important change in the By-Laws was made at the instance of the Committee on Fellowship and Membership as a result of a special study made of the grades of membership. In effect, this change does away with the former distinctions between active and associate members, creating instead a grade known as "member." Constituents from any country may be elected to this and to other classes of membership except that of "Fellow." Fellows must be professional health workers from the United States and its possessions, Canada, Mexico, and Cuba.

The former provisions of the By-Laws regarding members and associate members had attempted to distinguish between these two classes on a basis which did not prove practical in operation. A good many persons classified in one way at the time of entering the Association are now eligible for another class, and considerable confusion has arisen over this arbitrary distinction. At the same time that general membership is broadened, an effort will be made by the Committee on Fellowship and Membership to tighten up the requirements in the higher grade of Fellowship.

The Governing Council considered a revision of the procedure for the nominations to the Governing Council, desiring that the representation on the Governing Council in the future might be more democratic and better distributed geographically. After much discussion, it was decided to leave this proposal on the table in such a form that it may be raised for action at the next Annual Meeting if, in the opinion of those interested, it would accomplish its purpose. There appeared to be no difference of opinion on the need for a better method, but there was a question in the minds of a good many members of the Council whether the ideal scheme had yet been found.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

T. F. Abercrombie, M.D., State Department of Health, Atlanta, Ga., State Director of Health

Robert K. Galloway, M.D., M.P.H., Franklin, Tenn., Director, Williamson County Health Department

Walter H. Hartung, M.D., State Office Building, Columbus, O., State Director of Health

Bernard Hochfelder, M.D., Coushatta, La., Director, Red River Parish Health Unit

Ferdinand R. Krembs, M.D., Stevens Point, Wis., Health Officer

J. W. Lowe, M.D., Merrillan, Wis., Health Officer

William J. Lutz, Route 9, Box 164, Milwaukee, Wis., Health Officer

Charles H. Mason, M.D., 1302 Tower Avenue, Superior, Wis., Health Officer

John A. McDonald, M.D., Eastport, Me., Washington County District Health Officer

John C. McGuire, M.D., Hazlehurst, Miss., County Health Officer

Michael J. Nester, M.D., 710 North Main Street, Providence, R. I., Superintendent of Health

John Oberwager, M.D., 1327 Lexington Avenue, New York, N. Y., Sanitary Superintendent, New York City Department of Health

Dr. Gral. Jose Siurob, Avenue Mariano Escobedo #59, Tacuba, Mexico, D. F., Mex., Head of Federal Health Department

G. Colbert Tyler, M.D., City Hall, Newport News, Va., Health Officer

Richard W. Weiser, M.D., 139 E. Hazeltine Avenue, Kenmore, N. Y., Medical Supervisor, City Public Schools

Harry F. Wilson, M.D., C.P.H., Dillon, S. C., County Health Officer

Dr. F. T. Younker, Galesville, Wis., Health Officer

Laboratory Section

Irving H. Borts, M.D., 817–7th Avenue, Iowa City, Ia., Bacteriologist, State Laboratory

Frank W. Bouska, M.S., 1526 South State St., Chicago, Ill., Superintendent, Beatrice Creamery Company

Cornelia L. Carey, Ph.D., Barnard College, New York, N. Y., Assistant Professor

Gail M. Dack, M.D., Ph.D., 5724 Ellis Avenue, Chicago, Ill., Assistant Professor, Department of Hygiene and Bacteriology, University of Chicago

Earl W. Flosdorf, Ph.D., 36 South Wyoming Avenue, Ardmore, Pa., Associate, Department of Bacteriology, School of Medicine, University of Pennsylvania

Paul S. Galtsoff, Ph.D., U. S. Bureau of Fisheries, Washington, D. C., Charge of Oyster Fishery Investigations

Lucy Heathman, M.D., Ph.D., State Depart-

ment of Health, Minneapolis, Minn., Assistant Director, Preventable Diseases Division

Betty S. Kolchin, 3 Research Laboratory, Ft. of East 15 Street, New York, N. Y., Bacteriologist

George F. Leonard, M.D., E. R. Squibb & Sons, New Brunswick, N. J., Bacteriologist and Immunologist

Charles S. McCleskey, Ph.D., Iowa State College, Ames, Ia., Bacteriology Teacher

Wayne N. Plastridge, Ph.D., Storrs Agricultural Experiment Station, Storrs, Conn., Associate Bacteriologist

George E. Rockwell, R. F. D., Milford, Ohio, Associate Professor of Bacteriology, Medical College

Wilbert S. Slemmons, M.S., Oconomowoc, Wis., with Carnation Company

Gustav I. Steffen, Ph.D., 525 East 68 Street, New York, N. Y., Assistant Bacteriologist, New York Hospital

R. W. Titus, Ph.D., Marysville, O., Director of Research, Nestle's Milk Products, Inc.

John A. Toomey, M.D., City Hospital, Cleveland, Ohio, Physician in Charge

Oscar B. Williams, Ph.D., 1739 H Street, N.W., Washington, D. C., Bacteriologist, National Canners Assn., Research Laboratory

Vital Statistics Section

J. F. Blackerby, 532 W. Main Street, Louisville, Ky., State Registrar of Vital Statistics

Franklin H. Reeder, Jr., 410½ Nancy Street, Charleston, W. Va., Acting State Registrar of Vital Statistics

Public Health Engineering Section

Harold S. Adams, B.S., 213 North Sycamore Street, Marshall, Mich., Sanitary Engineer, Calhoun County Health Department

O. T. Birkeness, 605 W. Washington Street, Chicago, Ill., Sanitary Engineer, Wallace & Tiernan Company

Earl Devendorf, B.S., 1228 State Street, Schenectady, N. Y., Associate Director, Division of Sanitation, State Department of Health

Arthur B. Fergusson, 24 N. Sheppard Street, Richmond, Va., Chief Sanitary Officer

Ed L. Penfrase, 101 Park Avenue, New York, N. Y., Research work in Public Health Engineering

Robert R. Stewart, State Board of Health, Jefferson City, Mo., Engineer

Charles P. Tracy, 1118 Stewart Ave., Knoxville, Tenn., Director of Sanitation, City Health Department.

Industrial Hygiene Section

William H. Lehmberg, S.B., American Optical Company, Southbridge, Mass., Research and Development work on respiratory protective devices and dust quantitation instruments

Edward G. Meiter, Ph.D., Employers Mutuals, Milwaukee, Wis., Director, Industrial Hygiene Laboratory

Heymen R. Miller, M.D., 2 East 85 Street, New York, N. Y., Practice and consultation in Industrial Medicine

Food and Nutrition Section

Morris Ant, M.D., 277 Eastern Parkway, Brooklyn, N. Y., Physician

Henry Hoffmann, Jr., Rm. 552, State Office Bldg., St. Paul, Minn., Chief Chemist, Department of Agriculture

George H. Marsh, M.S., Department of Agriculture & Industries, Montgomery, Ala., Supervisor, Food and Drug Control

Morris Ostrolenk, B.S., U. S. Department of Agriculture, Food & Drug Administration, Washington, D. C., Bacteriologist

Child Hygiene Section

Elizabeth Andruszkiewicz, M.D., 2063 South 13 Street, Milwaukee, Wis., Child Welfare Physician

Frances A. Cline, M.D., State Board of Health, Madison, Wis., Staff Physician, Bureau of Child Welfare

A. Winnifred Golley, R.N., Box 94, Charlevoix, Mich., County Nurse, Children's Fund of Michigan

Reverdy M. Hall, M.D., 324 East Wisconsin Avenue, Milwaukee, Wis., Pediatrician, Milwaukee County Day Schools

Edythe P. Hershey, M.D., School Administration Building, Dallas, Tex., Director, School Health

Katharine F. Lenroot, B.A., Chief, Children's Bureau, Department of Labor, Washington, D. C.

Albert McCown, M.D., Children's Bureau, Department of Labor, Washington, D. C., Acting Director, Division of Maternal & Child Health

Mae C. Schroder, M.D., Bureau of Laboratories, Ft. of East 16 Street, New York, N. Y., Research Worker

Lendon Snedeker, M.D., M.P.H., 66 Commonwealth Avenue, Boston, Mass., Practising Pediatrics

Irene T. Stemper, 209 Woodland Lane, Oconomowoc, Wis., Examining Physician, Waukesha County Child Health Center

Nina Tomkiewicz, M.D., 920 North 15 St., Milwaukee, Wis., Child Welfare Clinic Physician

Public Health Education Section

Francis L. Bacon, LL.D., Evanston Township High School, Evanston, Ill., Principal
Ruth L. Conrad, M.A., 1077 New York Avenue, Pasadena, Calif., Instructor, Bacteriology, Pasadena Junior College
Elizabeth Dean, B.S., 6 Payne Place, Normal, Ill., Assistant Professor of Hygiene and Health Education, Normal University
Walter F. Greenman, 320 Otis Street, West Newton, Mass., Member, Executive Committee, Massachusetts Tuberculosis League
Alvin Powell, M.D., Lafayette, Calif., University of California, Dept. of Education

Public Health Nursing Section

Norma B. Eskil, R.N., 308 South Wilson Street, Royal Oak, Mich., Visiting Nurse, Detroit Visiting Nurse Association
Elnore Hackmann, R.N., Marshfield, Mo., Webster County Public Health Nurse
Hazel Hutcheson, Court House, Fargo, N. D., Supervisor, County Public Health Nursing
Lulu J. Koepke, Benzon, Ariz., U. S. Public Health Service
Lucille Morgan, R.N., 310 Grover Street, Warrensburg, Mo., Nurse, Central Missouri State Teachers College
Margaret B. Purvis, B.S., 38 East Highland Avenue, Atlantic Highlands, N. J., Superintendent of Nursing Education, New York City Department of Health
Cecile O. Sparkman, Lewisburg Avenue, Franklin, Tenn., Williamson County Nurse
Elsie B. Thomson, 145–95 Street, Brooklyn, N. Y., Supervising Nurse, New York City Department of Health
Ethelyn Town, R.N., Jefferson, Wis., Jefferson County Nurse
Esther C. Treadway, R.N., 2001 Warren Street, Winfield, Kans., City School Nurse
Jane White, R.N., 820 Bush Street, Jackson, Mich., Supervisor, Public Health Nurses
Edna L. Whitesides, P. O. Box 235, Columbia, Mo., Metropolitan Life Ins. Co. Nurse
Ruth I. Wisnaes, R.N., 704–7 Street, Bismarck, N. D., State Supervisor Nursing Service, F.E.R.A.

Epidemiology Section

Floyd C. Turner, M.D., National Institute of Health, Washington, D. C., Surgeon, U. S. Public Health Service

Unaffiliated

Charles H. Eastwood, Wallace & Tiernan Co., Newark, N. J., Advertising Manager
Dwight O'Hara, 5 Bay State Road, Boston, Mass., Professor of Preventive Medicine, Tufts College, Medical School
George R. Wilkes, 3308 School Lane, Drexel Hill, Pa., Biological Department, The National Drug Company

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HONORARY FELLOW ELECTED

AT the Milwaukee Annual Meeting, Dr. Gustavo Pittaluga, of Madrid, Spain, was elected to Honorary Fellowship in the American Public Health Association.

Dr. Pittaluga is Director of the Instituto Nacional de Sanidad, Chief of the Spanish Public Health Service, and Professor of Tropical Medicine and Hygiene in the University of Madrid Medical School.

SOUTHERN BRANCH, A.P.H.A.

THE meeting of the Southern Branch of the American Public Health Association, to be held at the Jefferson Hotel, St. Louis, Mo., November 19–20, will include a symposium on poliomyelitis.

AT THE MILWAUKEE MEETING

Dr. J. Offringa, the Director of the Public Health Service in Batavia, Dutch East Indies, was among the overseas visitors at the Milwaukee meeting.

Another distinguished visitor from abroad was Dr. Einar Rietz, the Health Officer of Stockholm, Sweden. Dr. Rietz presented a paper at the dinner of the Health Officers Section on the control of syphilis.

Dr. Angel de la Garza Brito, Supervisor General of the Departamento de Salubridad, Mexico, in attendance at Milwaukee was the official representative of the Federal Department of Health of which Dr. Gral. Jose Siurob is Director General. Dr. Brito was elected a Vice-President of the Association.

NEWS FROM THE FIELD

COMMISSION TO CODIFY HEALTH LAWS

A PUBLIC HEALTH commission to codify the health laws of the State of Massachusetts, eliminating those which are obsolete and revising others, was appointed by Governor Curley, August 21.

Henry D. Chadwick, M.D., State Commissioner of Public Health, member A.P.H.A., is Chairman of the Commission; Wilson G. Smillie, M.D., Professor of Public Health Administration, Harvard School of Public Health, Fellow A.P.H.A., is Vice-chairman; and Charles F. Wilinsky, M.D., Deputy Health Commissioner of Boston, F.A.P.H.A., is Secretary.

In addition to the codification of health laws, the Commission also will consider minimum standards for local health officers, the organization of county health districts, making a study of industrial hygiene, the licensing of hospitals, and milk control practices.

EIGHT HOURS FOR NURSES

UNDER the auspices of the Committee on Eight Hours for Nurses, District 13 of the New York State Nurses Association, there will be a Nurses Hobby Show, at the Hotel Biltmore, New York, on November 14–15.

The objectives are:

1. To present the hobbies of nurses and demonstrate the versatility of members of the profession.
2. To make available opportunities and resources for hobbies in New York City.
3. To stimulate widespread interest in the Hobby Show among doctors, hospital authorities, and the general public to the end that there will be more general recognition of the fact that nurses need leisure; that shortened hours of work will give them added zest and time for broadening interests which will reflect advantageously in their care of the sick.

INTEREST IN INFLUENZA

DR. RUFUS COLE, of the Hospital of the Rockefeller Institute for Medical Research, New York, has requested that state health officers notify him at the Institute of any fresh outbreaks of influenza which may occur.

There have been isolated in some recent outbreaks organisms which may stand in causal relationship to this disease and Dr. Cole wishes this advance information in order that further studies can be made.

COURSE IN PUBLIC HEALTH TEACHING

A FOUR-YEAR integrated curriculum in public health teaching has been established at George Washington University School of Medicine, Washington, D. C., to parallel its curriculum in mental health established 3 years ago under Dr. William A. White.

The public health course has been made a part of the regular medical course for the degree of doctor of medicine but is open also to special and graduate students in the public health field. Courses in community health, sanitation, hygiene, preventive medicine, and the public health aspects of medicine and surgery are included. —*J.A.M.A.*, Sept. 28, 1935, p. 1044.

CRIPPLED CHILDREN REHABILITATION PROGRAM IN SOUTH CAROLINA

THE South Carolina Society for Crippled Children and the South Carolina State Department of Health have launched a state-wide program for rehabilitation, with district headquarters in Greenville, Columbia, Florence, and Charleston.

Clinics will be held weekly in these cities and in Spartanburg.

A committee consisting of Dr. Lesesne Smith, of Spartanburg, Dr. Julian P. Price, of Florence, and P. G. Sherer, Chief of the Division of Vocational Rehabilitation in the State Department of Education, is in charge of the program, which is financed by funds raised by the society and by money available to the State Health Department for orthopedic work.

MASSACHUSETTS HEALTH SURVEY

THE share of Massachusetts in the $3,450,000 appropriation for a nation-wide public health survey will be $162,000. A house-to-house canvass will be made to determine the prevalence of chronic diseases.

Sample groups of certain income levels will be studied in this national survey, sponsored by the U. S. Public Health Service and carried out by the Works Progress Administration. Medical facilities for the care of the sick will be studied.

NEBRASKA HEALTH SERVICE CREATED

THE Omaha-Douglas County Central Health Service was incorporated August 1.

The new organization aims to enable persons of low income to obtain medical service at a cost within their financial means, establish a friendly doctor-patient relationship, aid the physician in the collection of fees, and prevent those persons from receiving free clinic care who can afford to pay for medical service.

The incorporators of the new service are Dr. Frederick O. Beck, Dr. E. H. Bruening, and Dr. John Jay Keegan, all of Omaha. The headquarters will be in Omaha, Neb.—*J.A.M.A.*, Sept. 14, 1935.

MINNESOTA HEALTH SURVEY

OF the $3,450,000 federal allocation for a national public health survey, Minnesota will receive $108,500 to carry out its studies, it is reported.

A house-to-house canvass will be made to determine the prevalence of chronic diseases; physical examinations will be given; and studies of medical facilities will be carried out.

BROSS PRIZE

A PRIZE of $15,000 will be awarded under the Bross Foundation, established at Lake Forest College, Lake Forest, Ill., in 1879, by William Bross in memory of his son Nathaniel.

Known as the Bross Prize, the award will be given for the best book or manuscript heretofore unpublished on the connection, relation, and mutual bearing of the humanities, the social sciences, the physical sciences, the biological sciences, or any branch of knowledge with and on the Christian religion. The award will be made on January 1, 1940.

William Bross was a former (1865–1869) Lieutenant-Governor of Illinois and a Trustee of Lake Forest College for 26 years. With J. L. Scripps, Joseph Medill, Alfred Cowles, and others, he was founder of the *Chicago Tribune*.

In 1925 the prize went to Douglas C. MacIntosh, Yale University Professor. Other winners have included a Scotsman and an Englishman. Distinguished men who have lectured at Lake Forest College under the Bross Foundation have included Professor Marcus Dods of New College, Edinburgh, Scotland; Professor J. Arthur Thomson of the University of Aberdeen, Scotland; Dr. Frederick J. Bliss of Beirut, Syria; Reverend John N. Figgis of Mirfield, England; Professor Henry W. Wright of the University of Manitoba, Canada; Dr. M. Bross Thomas of Lake Forest.

"The offer must be open to scientific men, the Christian philosophers and historians of all nations."

Those entering the competition may have until September 1, 1939. They are to submit their manuscripts of a minimum of 50,000 words.

NEW MEXICO DISTRICT HEALTH OFFICERS

HEALTH work in New Mexico has been organized into 10 districts, each under the supervision of a full-time health officer.

Nine health officers have already been appointed, with headquarters as follows:

Elroy F. McIntyre, M.D.,* Santa Fe
Edgar B. Beaver, Gallup
James R. Scott, Ph.D.,† Albuquerque
Charles W. Gerber,† Las Cruces
William W. Johnston, M.D.,† Las Vegas
Owen E. Puckett, M.D.,* Carlsbad
Frank W. Parker, Jr., Silver City
Julian O. Long, Los Lunas
Leonard A. Dewey, Clovis (temporary)

* Member, A.P.H.A.
† Fellow, A.P.H.A.

CHANGES IN PUBLIC HEALTH SERVICE

IT has been announced that the following members of the U. S. Public Health Service have been promoted and commissioned as medical directors in the regular corps of the service:

James P. Leake, M.D., F.A.P.H.A.
Lawrence Kolb
H. E. Hasseltine, M.D., F.A.P.H.A.

Dr. Hasseltine was recently relieved of his duties at San Francisco, Calif., and assigned to Carville, La., in charge of the U. S. Marine Hospital.—*J.A.M.A.*, Sept. 28, 1935, p. 1047.

PUERTO RICO PERSONALS

EIGHT Puerto Ricans were recently designated by Eduardo C. Morales, M.D., Dr.P.H., Commissioner of Health of Puerto Rico, F.A.P.H.A., to receive fellowships granted by the Rockefeller Foundation's International Health Division for study in the United States. They are:

Dr. Norberto A. Quinones, who will study bacteriology
Dr. Juan Basora and Dr. Victor J. Montilla, public health
Dr. Abel de Juan, vital statistics and epidemiology
Dr. Jose R. Vivas and Dr. Libertad R. Gaetan, tuberculosis
Winifred M. Mendez and Carmen L. Rivera, public health nursing

It has been announced that Joseph H. Axtmayer, Ph.D., has recently returned to the School of Tropical Medicine of the University of Puerto Rico, conducted under the auspices of Columbia University, after a year of research in biologic chemistry at the University of Rochester; and Luis Hernández has returned from special study in clinical pathology at the University of Michigan Medical School, Ann Arbor.

Other members of the faculty who are studying in the United States and Europe include: Dr. Enrique Koppisch of the Department of Pathology, who is at Basel, Switzerland, studying filtrable viruses on a fellowship from the Rockefeller Foundation; Luis M. González, at the Henry Phipps Institute of the University of Pennsylvania, Philadelphia, Pa., for study of tuberculosis; Americo Pomales-Lebrón, at the University of Michigan for a doctorate in bacteriology; Dr. Rafael Rodriguez-Molina and Felix Lamela, at the University of Chicago, for courses in hospital management and administration.—*J.A.M.A.*, Sept. 21, 28, 1935, pp. 975, 1046.

PERSONALS

LEONARD GREENBURG, M.D., Fellow A.P.H.A., has resigned his position as Health Officer of New Haven, Conn., effective October 15. He has been appointed Executive Director of the Division of Industrial Hygiene, New York State Department of Labor. He has already

taken up his new duties and will have his office in the State Office Building, 80 Center Street, New York City. Dr. Greenburg has been identified with the Industrial Hygiene Section of the A.P.H.A. for many years and has been connected with the Department of Public Health at Yale University.

DR. ANDREW J. HAMILTON has been appointed Health Officer of Rison, Ark.

DR. JOSEPH L. BRYAN, of Xenia, Ill., has been appointed Health Officer of the district including Clay, Effingham, Jasper and Crawford Counties.

DR. JOHN A. MCDONALD, of East Machias, Me., has been appointed District Health Officer.

DR. CHARLES F. MCKHANN, Assistant Professor of Pediatrics and Communicable Diseases, Harvard Medical School, Boston, Mass., has gone to China, where he will be Visiting Professor of Pediatrics at Peiping Union Medical College during the first half of the school year 1935–1936. He will return to Boston early in March, 1936.

DR. MELVIN L. HUTCHESON, of Denton, Tex., has been appointed Health Officer of Denton County, succeeding Dr. James H. Hicks.

DR. ELBERT W. WRIGHT, of Bowie, Tex., was recently elected Chairman of the Texas State Board of Health, succeeding Dr. Charles M. Rosser, of Dallas.

WALTER M. DICKIE, M.D., of Berkeley, has been re-appointed Health Officer of the State of California. Dr. Dickie had held the position from August, 1920, to 1931, when he was succeeded by Giles S. Porter, M.D., F.A.P.H.A. Dr. Dickie succeeds J. D. Dunshee, M.D., F.A.P.H.A., who resigned.

CLAIR E. TURNER, DR.P.H., Professor of Biology and Public Health at the Massachusetts Institute of Technology, Cambridge, Mass., Fellow A.P.H.A., has been invited by the University of Calcutta, India, to deliver a series of 6 lectures on the organization of health education.

EARLE G. BROWN, M.D., of Topeka, Kans., F.A.P.H.A., Health Officer of Topeka from 1919 to 1925, and since 1925 Secretary of the Kansas State Board of Health, has been appointed Professor of Hygiene and Preventive Medicine at the University of Kansas School of Medicine, Kansas City, Kans.

DR. ALIX CHURCHILL, Associate Secretary-General of the International Association for Prevention of Blindness, and Executive Secretary of the International Union Against Tuberculosis, recently arrived in the United States for a series of conferences in various cities on policies and procedures in the world-wide fight against blindness and tuberculosis. Dr. Churchill is the guest of the National Society for the Prevention of Blindness and the National Tuberculosis Association.

FRANK P. STROME, M.D., of the Harrisburg Department of Health, member A.P.H.A., has been appointed Chief of the Bureau of Vital Statistics of the Pennsylvania State Department of Health, to succeed Dr. William E. Matthews, who had served 46 years.

GEORGE A. HAYS, M.D., formerly with the Missouri State Board of Health, Jefferson City, Mo., has been appointed State Epidemiologist of Arizona, with offices in Phoenix. He succeeds Hugh F. Stanton, M.D., C.P.H., resigned. Both Dr. Hays and Dr. Stanton are members of the A.P.H.A.

CLEALAND A. SARGENT, M.D., of Dover, Del., member A.P.H.A., for many years Director of Communicable Disease Control and Director of Infant and Maternal Hygiene in

the Delaware State Board of Health, has been provisionally appointed epidemiologist with the New York State Department of Health.

DR. PHILIP I. CREW has been appointed Health Officer of Marion, Ia.

DR. JOYCE I. HARTMAN has been appointed Supervisor of Health Education in the Cleveland, Ohio, public schools, succeeding Lyman W. Childs, M.D., member A.P.H.A., who had held the position since 1910.

DR. F. FLOYD SOUTH, and DR. ARCHIE C. VAN CLEVE, of Portland, Ore., have been appointed to the Oregon State Board of Health, to succeed Dr. Albert Mount, of Oregon City, and Dr. Joseph P. Brennan, of Pendleton, respectively.

DR. EDWARD J. FINN has been appointed Health Officer of Shelton, Conn., succeeding Dr. Francis I. Nettleton.

DR. JOHN D. MILBURN has been named Health Officer of East Hampton, Conn., to succeed the late Dr. Frederick T. Fitch.

DR. JOSEPH DAVID ARONSON, of the staff of the Henry Phipps Institute of the University of Pennsylvania, Philadelphia, Pa., has been appointed special expert on tuberculosis in the Indian Service under the Department of the Interior. He has been granted leave of absence from the Institute and has established headquarters in Albuquerque, N. M., from which he will direct a study of opportunities for preventive work against tuberculosis in New Mexico and Arizona Indians. After several weeks he will make similar observations on the Blackfoot and Crow Indians in Montana. Dr. Aronson is assistant professor of bacteriology at the University of Pennsylvania School of Medicine. Dr. Esmond R. Long, Director of Phipps Institute, has again been appointed special consultant on tuberculosis; in this capacity he made a survey of the Papago Indians for the Indian Service last winter.

DEATHS

CLARENCE W. BUCKMASTER, M.D., member A.P.H.A., for 15 years Commissioner of Health of Yonkers, N. Y., died on October 7. He specialized in contagious diseases and his efforts won for Yonkers a national reputation for its low death rate. He organized an immunization campaign in 1927 which lowered the city's diphtheria total from 438 cases in that year to 3 cases in 1933. He was 63 years of age.

ALBERT PFEIFFER, M.D., Director of the Division of Social Hygiene in the New York State Department of Health, Albany, N. Y., died September 24, at the age of 53.

J. FRED ECKERSON, M.D., of Shelby Center, N. Y., died recently. Dr. Eckerson had been Health Officer of Shelby since 1904.

WALTER TREAT WALKER, Vice-president-in-charge-of-sales of the Kimble Glass Company, of Vineland, N. J., died at White Sulphur Springs, W. Va., on October 2.

JOSEPH C. BLOODGOOD, M.D., of Baltimore, Md., member A.P.H.A., died suddenly on October 22. He was Adjunct Professor of Surgery at the Johns Hopkins University School of Medicine. He also was on the staff of the Johns Hopkins Hospital and was chief surgeon at St. Agnes's Hospital, as well as head of the Hopkins Laboratory of Surgical Pathology. He was active in the fight against cancer.

CONFERENCES

Nov. 1, Mid-Year Meeting of the New York State Association of Public Health Laboratories, at the State Laboratory, Albany, N. Y.